

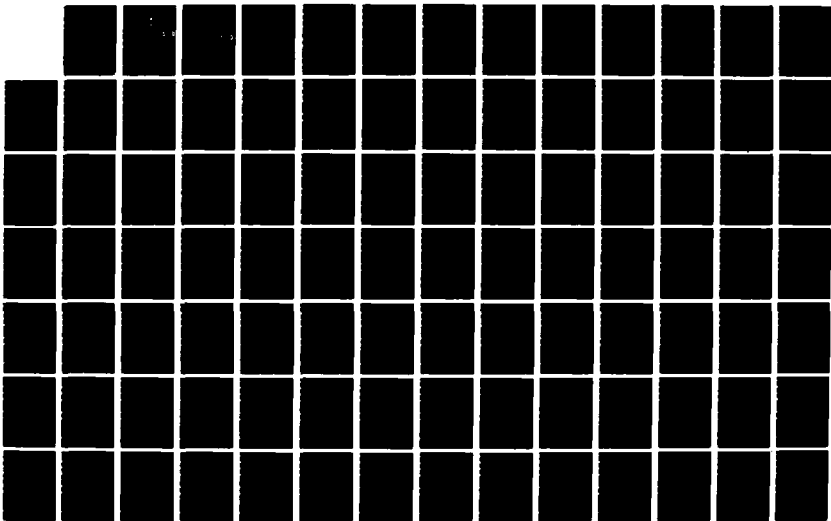
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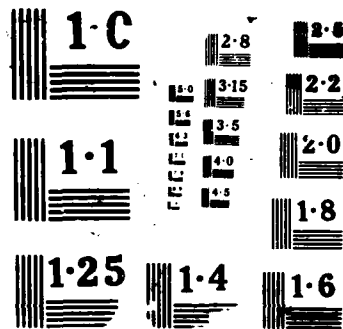
DEVELOPMENT OF A PROGRAM MANAGER/USER COMMUNICATION
EVALUATION TOOL(U) AIR FORCE INST OF TECH
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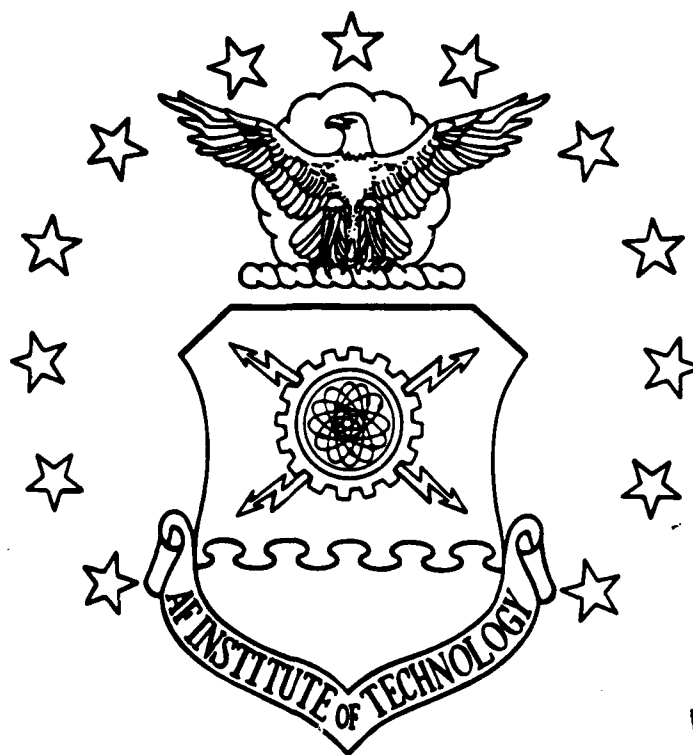
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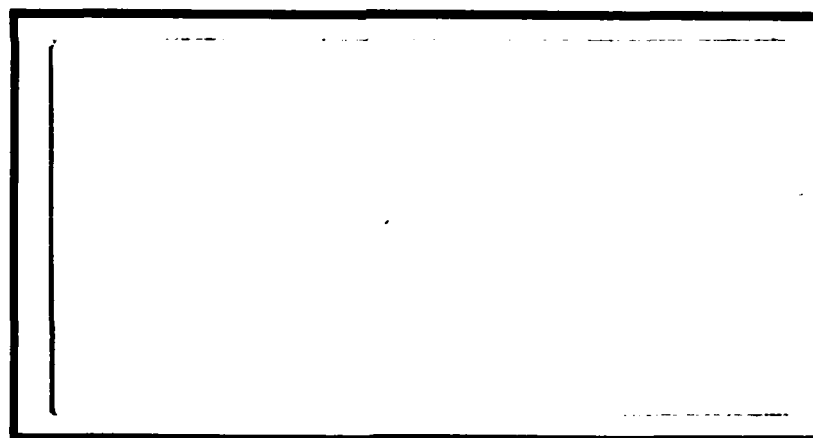


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DEVELOPMENT OF A PROGRAM MANAGER/USER
COMMUNICATION EVALUATION TOOL

THESIS

Robert M. Browder, III
Lieutenant Commander, USN

AFIT/GLM/LSM/87S-8

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AFIT/GLM/LSM/87S-8

DEVELOPMENT OF A PROGRAM MANAGER/USER COMMUNICATION
EVALUATION TOOL

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Logistics Management

Robert M. Browder III, B.S.
Lieutenant Commander, USN

September 1987

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Preface

My primary concern was to help the program manager successfully field a system. The concept of developing a tool to aid in evaluating communications was derived from studies done on customer service. In identifying what the customer wants, many businesses had neglected to ask the customer what his needs were. In a similar light, program managers construct messages based on what the program manager feels is important and not necessarily what is important to the receiver. A communications evaluation tool provides a means of finding out, from the receiver of a communication, if the communication possesses characteristics which make the communication effective.

I would like to express my appreciation to Lieutenant Colonel David Lloyd for his patience and persistence in helping me identify the problem. His untiring help in identifying a means of approaching the problem was most beneficial. The communications professionals and the program managers who took the time to assist in weighting the attributes of communication methods are recognized by me as truly considerate individuals. Dr. Paul Anderson of Miami University provided some insightful observations into aspects of communications not included in my project development. Members of the faculty at the Air Force Institute of Technology, specifically Captain Richard Andrews, Dr. Carl Davis, Dr. Charles Fenno and Dr. Robert Weaver, provided assistance at critical points in developing the methodology used in the project.

Robert M. Browder III

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Abstract

The purpose of this study was to develop a tool to help program managers evaluate their communications to the user. The needs of program managers were considered in the development of a proposed tool. A written tool requiring a minimum of time to use, but able to provide a means of prioritizing communication deficiencies, was the primary criteria.

Methods of communication used by program managers and important attributes associated with these methods were identified by an extensive review of business communications literature. Weightings of the attributes were obtained by having professionals in the field of communications assign weights to the attributes. The nonparametric Friedman F test was used to evaluate whether or not there were differences in the weights assigned by the communications professionals to the attributes within a method of communication. For all methods of communication examined, at least one of the attributes was found to differ from the other attributes. Also, several program managers assigned weightings to the attributes. The weightings given by the communications professionals were compared to the weightings given by the program managers. It was found that there was no statistically significant difference between the two group's weightings.

A proposed tool was developed based upon the attributes of the methods. The tool was designed so that the user could evaluate the presence of an attribute on a scale from one to five. The weightings obtained from the professional communicators could then be multiplied

times the value given by the user. The resulting score can be compared to an arbitrary value selected by the program manager or it can be compared with other evaluations. The tool allows the program manager to obtain feedback on eight methods of communication.

DEVELOPMENT OF A PROGRAM MANAGER/USER COMMUNICATION EVALUATION TOOL

I. Introduction

General Problem

The President's Blue Ribbon Commission on Defense Management identified six elements of successful program management. One of these elements was the need to establish a dialogue between the program manager and the customer (user). Adequate communication is essential if the end result of the program is to meet user requirements. This communications link must be established early in the program so that when trade offs are made between cost and specifications the program manager will be confident that his decisions accurately reflect the user's needs (Packard and others, 1986:50).

Specific Problem

The importance of communications is frequently stated in the program management literature (Baumgartner, Brown, and Kelly, 1984; Farrow and Robey, 1982; Gaynor, 1984; Ginzberg, 1981; Kelly, 1984; Merchant, 1984; Multinovich and Vlahovich, 1984; Packard and others, 1986; Smith, 1982; Wynn, 1981) but the program manager is left to his own means to evaluate communications with the user. Without a tool to help him or her evaluate the effectiveness of communications with the user, the program manager cannot be confident that his or her communications with the user are effective. A tool to aide the program

manager in evaluating communications from the program manager to the user was needed. The purpose of this research was to develop a tool, which may be used by the program manager, to evaluate communications with the user.

Research Objectives

The following objectives were used to develop a communications evaluation tool:

- Identify the types of communications methods.
- Define the attributes of communication methods.
- Establish the importance of communications to the program manager.
- Identify meaningful measures for each of the methods of program manager/user communications.
- Develop a program manager/user communications evaluation tool, based upon the attributes of communications methods, that can be used to evaluate communications from the program manager to the user.
- Estimate the effectiveness of the program manager/user communication evaluation tool in evaluating the use of effective communications between the program manager and the user.

Definitions

The use of a standard terminology is important in any research effort. Many authors identify concepts with their own descriptors. The researcher has formed his own definitions to be used throughout this research. The definitions which follow represent the researcher's conceptualization of program management and communications terms.

Attributes: the characteristics of communication. An attribute affects the ability of the receiver to understand the message as intended by the sender.

Effective communications: Effective communications occur when the message sent is comprehended by the receiver just as the sender intends it to be received. When a sender incorporates attributes into a message he increases the probability of reception of the intended message by the receiver.

Method of communication: the medium of message transmission. Examples of methods of communication are oral, written, electronic, and non-verbal.

Meaningful measures of attributes: a gradient on which an evaluator can record the relative presence of an attribute.

Ranker: a participant in this research who assigned weights to the method attributes. These weights provided a rank order of the attributes.

Types of methods: the format of the method. The letter is a type of written communication, a conference is a type of verbal communication, and electronic mail is a type of electronic communication.

Background

The program management concept is generally invoked when a complex tasking is undertaken and the duration of the tasking is not anticipated to be permanent. The elements of program management differ little from other techniques of business management. Program management exists to carry out the planning, execution, and direction of a systems-oriented

organization. The acquisition of a weapons system, development of a management information system, and research are examples of programs which lend themselves to program management. Within the military, the program management concept is frequently used in the acquisition of a weapons system. The individual placed in charge of a program may be called the project manager, program manager, or acquisition manager (Townsend, 1977: I-3). The term "program manager" will be used in this research to identify the person in charge of a program.

The program manager's responsibilities include a multitude of tasks necessary to achieve the goals of the program. A common element of program management is the field implementation of the program's product. Implementation involves developing a system, or a sub-system, to a point where it is operational and is transferred to the user (Multinovich and Vlahovich, 1984:8). Translating the identified need into an engineering concept, choosing the prime developer, making provisions for support, training personnel and many other requirements for implementation fall under the program manager's purview. As in any honorable human endeavor, the program manager wants to be successful. Therefore, what must the program manager do to achieve success? This question has often been addressed. The researcher's review of the literature in Chapter 2 examines elements of success, how communications can contribute to program success, and how audits have been used to measure communications. Identification of a communication taxonomy and the attributes of methods of communications used by program managers are also addressed.

At this point it is sufficient to say that effective communications are extremely important to the program manager. Numerous studies done on program management have proven the need for effective communication skills (Baumgartner, Brown, and Kelly, 1984; Multinovich and Vlahovich, 1984; Smith, 1982; Wynn, 1981). Professionals in the field of communications have done extensive work to evaluate the effectiveness of communications between individuals and within organizations (Goldhaber, 1986). This research was focused on the communications from a Department of Defense program manager to the user of the system being fielded or supported by the program manager.

Scope of the Project

As previously stated, this research was directed towards developing a tool to help program managers evaluate their communications to the user of their program's product. Department of Defense program managers were the primary group this research was targeted towards. Two populations were sampled to provide information used in the development of this tool. Since the intent of the project was to develop a tool and not to perform a definitive study on communications, the sample sizes were restricted. The two populations sampled were avionics program managers and communication professionals. The sample populations selected are discussed in Chapter III.

Communication Dimensions. Communication used in a social situation was not included even though program managers may develop personal relationships with their users. Though it is recognized that communication is bi-directional, the tool developed is intended to be

used to measure only the effectiveness of communications from the program manager to the user. A comprehensive analysis of communications involves at least four aspects (Fenno, 1987). The four aspects of communications evaluation that should be considered by the program manager are:

Audience analysis by the program manager

Role of the program manager towards the user

Choice of method of communication

Use of the attributes of each method

Only the last aspect, use of the attributes of each method of communication, has been addressed by this research.

II. Literature Review

The literature review sought to establish the importance of effective communications to the program manager, to identify methods of communication important to the program manager and the attributes of these methods, and to provide a basis for developing a tool that could be used to aid in evaluating communications. An additional objective of the literature review was to provide a limited introduction to the process of communication. Barriers to communication and means of increasing the effectiveness of communications were reviewed. Program management literature was reviewed to ascertain the importance of communications to program managers. Communications literature provided some insight into methods of evaluating communications. Business communications texts provided the methods of communications and their attributes.

Establishment of the importance of communications was an important objective. If the importance of communications with the user could not be established, then development of a tool to evaluate communications with the user would have limited utility.

The Relationship of Communication to Program Success

Elements of Program Success. The success of a program can be operationally defined as having met the initial operational capability date, keeping the cost within program goals, or meeting technical requirements. These measures of success may sound appropriate to someone unfamiliar with program management but to the program manager they are not the main objective (Baumgartner, Brown, and Kelly,

1984:31). One definition that program managers agree on is that if a system "works well when fielded" the program is successful (Baumgartner, Brown, and Kelly, 1984:32). The user's judgment plays a significant role in the achievement of success under this definition. It is the user who determines whether the product is acceptable (Kelly, 1984:21). By reviewing the different elements that contribute to successful program management, insight into the elusive concept of success may be found.

There have been many efforts to identify the characteristics of successful programs or program managers. There are two main approaches used to study success in program management. The first focuses on the relationship of the characteristics of success to the organization of the program while the second relates to the skill of the program manager.

Characteristics of the program organization may be referred to as the organization state or the strategy of the organization to complete the program. Research has been performed to ascertain the organization strategies of successful programs. In a study of what makes armed forces acquisition programs successful, Baumgartner, Brown, and Kelly identified ten main characteristics which contribute to program success (Baumgartner, Brown, and Kelly, 1984:32-36):

- 1) People
- 2) Stability
- 3) Ability of the program manager
- 4) Continuity in the program office

- 5) Acquisition strategy
- 6) Resources
- 7) Use of state-of-the-art technology
- 8) The contractor
- 9) Influence of Department of Defense and other outside agencies
- 10) Department of Defense directives and regulations

In another study, Multinovich and Vlahovich (Multinovich and Vlahovich, 1984) were concerned with successful implementation of a management information system. Implementation of a management information system may be associated with program management. Instead of identifying factors, their approach involved identifying strategies for success. These strategies were divided into two groups, people related and system related strategies (Multinovich and Vlahovich, 1984:9). The people related strategies are:

- 1) Get management involved,
- 2) Ascertain there is a need for the system,
- 3) Get user involvement,
- 4) Provide training and education,
- 5) Consider user requirements,
- 6) Consider user attitudes,
- 7) Establish effective communications,
- 8) Keep the interface simple, and
- 9) Let management determine information usefulness.

The system related strategies consist of:

- 1) Identifying the problem,
- 2) Planning the implementation,
- 3) Controlling the implementation process, and
- 4) Evaluating the implementation.

Studies on the skills of the program manager have been concerned with the learned and natural abilities of the program manager. The program manager is the coordinating and driving force of a program. His personal traits may have an overwhelming influence on program success. The traits of the successful program manager have been studied in much the same detail as the characteristics of the program itself. In a report prepared by Kelly (Kelly, 1984), based on a study conducted by Baumgartner, Brown, and Kelly (Baumgartner, Brown, and Kelly, 1984), the personal characteristics of the program manager were identified. These characteristics are:

- 1) Acquisition background,
- 2) Leadership qualities,
- 3) Managerial abilities,
- 4) Integrity,
- 5) Communication skills, and
- 6) People skills.

A report listing a greater number of the characteristics of the program manager was done by Smith (Smith, 1982). The attributes he contends are important are (Smith, 1982:23):

- | | |
|-------------------------------------|-----------------------|
| 1) Resourcefulness, | 9) Intuitiveness, |
| 2) Observance, | 10) Energy, |
| 3) People orientation, | 11) Acting skills, |
| 4) Understanding of human behavior, | 12) Good judgment, |
| 5) Receptiveness, | 13) Logic, |
| 6) Good communication skills, | 14) Dedication, |
| 7) Self-starting, | 15) Intelligence, and |
| 8) Healthy skepticism, | 16) Creativeness. |

A study done for the Air Force looked at several possible factors or concepts regarding why some programs are considered successful and what contributed to the programs success. One of the more interesting findings was that cost, schedule, and performance emphasis did not hinder the program manger's desire to ensure the long term military effectiveness of the program (Wynn, 1981:73). Two of the top five causes of success were consistent funding and contractor proven excellence. Attention to the performance of the system was the number one contributor to success (Wynn, 1981:57-60). In the final analysis, system success was evaluated by looking at how well the user understands the military use of the system and how well the system works when fielded (Wynn, 1981:74). The user's understanding of the system is gained through communications with the program manager. Therefore, management's successful attainment of goals is dependent upon communication skills. Most of a program manager's time should be spent communicating with the user in addition to the contractor and program team members.

Program management literature commonly cites consideration of the human element and communications as characteristics of successful programs. These characteristics may be possessed by either the system, the program manager or both. The communications skill of the program manager is repeatedly mentioned as a characteristic necessary for success. Furthermore, the ability to communicate with all types of audiences is a trait that is common to almost every program manager (Baumgartner, Brown, and Kelly, 1984:32-33). Within a program, the complexity of both the human element and communications are great. One aspect of communications, communications between the program manager and the user, will be addressed as a single dimension.

Communication as an Element of Success. When viewing communications between the program manager and user it is important to remember that communications should occur not only from the program manager to the user, but also from the user to the program manager. That is, the program manager should send effective communications to the user and be receptive to communications from the user.

A frequently stated purpose for promoting communications between the program manager and the user is to ensure the user makes a contribution to the program development. A program office is established to fulfill a need identified through a statement of need (SON). The statement of work (SOW) specifies the requirements that a contractor must meet to produce the desired product. One might be tempted to assume the statement of need was generated by the end user; however, this is not necessarily the case. The need may have been identified by an outside contractor, a military staff, or a governmental

body outside the executive branch of the government. A system cannot be successful unless the user feels a need for the system (Multinovich and Vlahovich, 1984:9-10). The program manager must also be confident that the objective of the program will fulfill a real need. One way he can achieve this assurance is by interacting with the end user. Once the need is validated by the program manager the statement of work must specify both the legal requirements and those characteristics which will make the product suitable for use by the user, including the characteristics of the user's environment (Multinovich and Vlahovich, 1984:11). The earlier program decisions can be made on factors affecting the user, the better it will be for the program. The definition stage is considered a preferable time to incorporate user desires since this stage generally accounts for only 25% of the program cost (Ginzberg, 1981:461).

A review of studies on program management has shown that effective communication is listed among the elements of success and the communicator must use every device available to ensure that the receiver gets the intended message. How does communication with the user make a contribution to program management success?

Communication between the program manager and user contributes to the success of the program through two mechanisms. These mechanisms are 1) conflict resolution between what the user wants and what the program manager perceives the goal of the program to be and 2) the establishment of user expectations for the product.

The give and take of conflict resolution can provide a means for the program manager to determine the user's requirements and views

regarding the ability of the program to meet these requirements. Of twenty-one factors Carter (Carter, 1976) identified as criteria for assessing system success, determination and justification of user requirements was second in importance (Carter, 1976:25). The role of conflict in information development was the subject of a study by Farrow and Robey (Farrow and Robey, 1982). The use of constructive conflict has the benefits of raising problems, encouraging their solution, stimulating interest, and generating innovation (Farrow and Robey, 1982:74). The generation of conflict through user participation should be a result of program manager and user interaction. The greater the communication, the more easily problems or conflicts are resolved (Kelly, 1984:25). Participation promotes resolution of problems or differences of opinion (Farrow and Robey, 1982:74-75) on the goals of the program. Through conflict and conflict resolution, agreement can be reached between the user and the program manager. Agreement between the program manager and user has been documented to be a characteristic of successful programs (Farrow and Robey, 1982:74).

The second purpose of communication is to form the expectations of the user. This is a significant function because the user is the final judge of how the system works when fielded. Research shows that system failure is frequently the result of user dissatisfaction (Ginzberg, 1981:461). If the user expects one thing, and the system does something else, the user's evaluation may not be complimentary. In research performed by Ginzberg on the prediction of failure of a system, he found that users who hold more realistic expectations of the system are more satisfied with that system (Ginzberg, 1981:472). From this finding he

suggests that user involvement has greater importance for the formation of realistic expectations than contribution to system design (Ginzberg, 1981:476).

A question that may come to mind is, "What is the actual ability of the user to make a contribution to the management of the program?" The user's impact is significant but does not affect the final product as much as the developer (Ginzberg, 1981:464). The helpfulness of the user is dependent upon the program manager. When the program manager keeps the user informed, works with the user, and creates the feeling within the user that the program partly belongs to the user then the user is felt to be a help by the program manager (Baumgartner, Brown, and Kelly, 1984:35). The development of strong interpersonal communication skills by the program manager is essential to obtaining the support of the user.

Interpersonal Communication

Interpersonal communication is a very complex undertaking. It can be defined as the transfer of ideas from one mind to another (Gaynor, 1984:19). There are four generally recognized facets of communications. These facets are the communicator, the message, the medium of transmission, and the receiver. Gaynor (Gaynor, 1984:19) describes each of these facets, or parts, as:

- Communicator: the originator of the message. The communicator decides what message will be sent, sets the tone of the message and the urgency.

- Message: the thoughts, ideas, or feelings the communicator wishes to transmit.
- Medium: the method of transmission. The method can be used by the communicator to set a desired tone for the message.
- Receiver: the individual whom the communicator is trying to transmit the message to. For effective communications to happen, the receiver must understand the intent of the message sent by the communicator.

For communications to occur, each phase of the communications process must be successfully executed. The process consists of creating an idea to transmit, translating the idea into symbols, using a medium to send the idea, reception of the message by a receiver, comprehension of the idea by the receiver and a response to the communication (Willis, 1983:32).

A skilled communicator molds his message and medium to "fit" the recipient. The onus is placed on the communicator to adjust to his audience if effective communication is to happen (Gaynor, 1984:20). The recipient of the message should be viewed as a passive body who must be enticed to receive a message through the skill of the communicator. It is incumbent upon the communicator to use every device possible to aid the recipient in receiving the message. When viewing communications between the program manager and user it is important to recognize that communications occur not only from the program manager to the user, but also from the user to the program manager. That is, the program manager

should achieve effective communications with the user and be receptive to communications from the user.

Effective Communication

Methods of improving communications center on either the facet of the communication or the process itself. A combination of methods can lead to improvements in successful communication. Some techniques that can be used are (Kerzner, 1979:217):

- Use of multiple medium
- Seeking feedback from the receiver in the form of a response or action
- Use of face-to-face communication when possible
- Evaluating the receiver's sensitivity
- Proper timing of the communication
- Reinforcement of the communication with action
- Repeating the message

Knowing the relative importance of methods for improving the effectiveness of communication may be helpful to a communicator. Gordon and Miller (Gordon and Miller, 1983:24) identified twenty-one factors of communication. They then conducted a survey to determine the rankings of these factors. Their research showed the following rank order:

Accurate listening
Credibility
Ideas organized clearly
Clear, distinct voice
Confidence while speaking
Sensitivity to others
Correct grammar
Persuasiveness

- Correct pronunciation
- Skillful use of formal channels
- Making decisions cooperatively
- Effective management of conflict
- Skillful use of informal channels
- Group leadership skills
- Legible handwriting
- Assertiveness
- Non-verbal expressiveness
- Interviewing skills
- Variety in vocabulary
- Variety in vocal intonation
- Ability to use parliamentary procedure

The above listing shows that accurate listening was seen as the most important factor. The sender of a communication has little control over how accurately the receiver listens; however, the sender can attempt to reduce background noise and other distractions which may act as barriers to communication.

Barriers to Communication

Barriers to communication can adversely effect program management. Four barriers to communication are physical, personal, semantic, and listening barriers (Willis, 1983:33). These barriers manifest themselves within program management because the program manager, contractor, or user gives inadequate consideration to the importance of communications. An important finding from studies on communication barriers in program management showed that the earlier communications are established within the program the fewer barriers arise (Kerzner, 1979:218). Several specific barriers or bottlenecks to communication have been identified in communications between the program manager and the contractor or user (Kerzner, 1979). The most significant of these barriers arises when all communications must flow through the program

office (Kerzner, 1979:222). Channeling of all communications through the program office reduces the reaction times to new information and one of the parties feels that the information is being filtered. When communications must flow through the program manager the potential for a bottleneck is great. This occurs when the program manager fails to correctly decipher the information and to retransmit it in a timely manner (Hollingsworth, 1986:96). On the other side of the spectrum are those circumstances in which the program manager is bypassed in communications. Instead of being the bottleneck for communications within the program, the program manager is not privy to essential communications. This happens when a government agent (who is not within the program office but begins to play the part of the contractor's customer) is placed in the contractor's plant (Kerzner, 1979:223). Communications may also become ineffective when either the government program manager or the contractor program manager sees himself as occupying a higher position than his counterpart. When this happens, one of the program managers will try to deal with an authority higher than his counterpart program manager (Kerzner, 1979:223). Instead of working as a team an adversarial relationship is created.

Barriers to communication can be recognized and associated with specific methods of communication. Bromage (Bromage, 1973) identifies several impediments to effective written communication. The most obvious barrier to communication is no communication (Bromage, 1973:527). Similar to the lack of communication, placing restrictions on whom one communicates with creates a barrier. The third barrier to communication is the use, or misuse, of stylistic devices that cloud the

message. These stylistic devices are often recognizable and are described as (Bromage, 1973:528-529):

- Abstract words which call for the reader to visualize a concept
- Use of subjective words to allow an emotional and personalized interpretation
- Hiding the identity of who is carrying out the action through use of the passive voice
- Trying to be non-offensive through the use of bland language
- Repeated use of cliches
- Incorporation of jargon to make something simple seem complex
- Sentences so long that the reader cannot unify the thought

Problems with communication, specifically downward communication from management, are addressed by Chase. His research shows that lack of clearly defined objectives, poor understanding of who is responsible for communications, failure to evaluate the effectiveness of communications, management's nonresponsiveness to holding regular meetings with employees, and the lack of a communications training program contribute to ineffective communication (Chase, 1973:81).

The program manager needs to be aware of real and potential barriers to communication. A perfectly constructed message will not be effective unless it is received. Once the program manager realizes what barriers exist he or she can work to overcome them.

Methods of Communication

The first step in developing a tool to aid in evaluating the effectiveness of communications was to identify the methods of communication used by program managers. Business communication texts provided the clearest discussions of different methods of communication. The communications literature groups methods of communication according to several classification systems or taxonomies. To enhance the understanding of communication methods, a discussion of these taxonomies follows. It is important to note the wide variety of taxonomies used in the literature.

A Broad Framework. A framework or taxonomy of communication methods provides the means of conceptualizing the communication environment, the medium of communication, or the intent of the communication. Goldhaber identified four taxonomies used to classify communications: the intended receivers, the purpose of the messages, the language modality (verbal or non-verbal), and the method of diffusion (Goldhaber, 1986:20-21). Each of these taxonomies will now be described.

Classification of whether a message is intended to be used within the organization or outside the organization calls for determination of the receiver. Those messages intended for receivers outside the organization are termed external and tend to include advertising, sales promotions, and public relations programs. Internal messages include memorandums, reports, and work group meetings.

The purpose of a message relates to both identifying the reason a message is transmitted and the function of the message. Goldhaber

(Goldhaber, 1986:21) described four reasons for sending messages in an organization. The first is to communicate information on subjects about the purpose of the organization. These messages are called task messages. Maintenance messages are the result of a second reason for sending messages. Maintenance messages allow the organization to promulgate policy. The third reason organizations send messages is to affect the human aspect. These messages deal with the morale and attitude of the people in the organization. A fourth function of messages is to allow an organization to adapt to the environment and are known as innovative messages.

Two of the communication taxonomies noted by Goldhaber, language modality and method of diffusion, overlap in several areas. The language mode classification consists of two broad categories. These categories are verbal and non-verbal messages. Verbal messages are those communications either spoken or written. Non-verbal messages are the unspoken or unwritten expressions shown through physical appearance, vocal cues, objects around the communicator or physical contact. Method of diffusion groups messages according to how they are disseminated. The two major categories in this classification scheme are software methods and hardware methods. Hardware refers to the technology of the message transmission while software refers to the medium chosen by the communicator. The medium may be either oral or written. Language modality and method of diffusion overlap in that they both use oral and written communications as groups to further classify communication methods.

Other authors use taxonomies centered around the situation in which a communication occurs to further categorize verbal messages. Kerzner (Kerzner, 1982:464) uses formal and informal to differentiate within the major categories of oral and written communications. The inclusion of formal and informal types of verbal communication is also used by Chase (Chase, 1973:79) to provide a matrix within which to categorize verbal communication. In addition to applying the use of formal and informal types to written and oral communication he used this taxonomy to subcategorize a combined oral and written method of communication and visual communication.

The methods of classifying communications discussed above provide the framework for reviewing the classification methods used by authors of business communication publications. During the review of these texts, it was discovered that the authors do not always define the method of classification used. The presence of key words, such as "internal" and "external," when referring to communication classification by intended receiver may indicate the type of classification scheme used. Writers of business communication texts may combine classification methods to reflect their own preferences. Therefore development of a taxonomy to be used in the design of a research instrument required an extensive review of the classification methods used by business communications professionals.

Language Modality. Language modality was one of the more frequently encountered classifications used in business communications. Aurner and Wolf (Aurner and Wolf, 1967) used this method to categorize oral communications. The subcategories of formal and informal were also

used. Under the category of formal oral reports he listed impromptu, extemporaneous, textual, memorized and oral reporting methods. Informal oral communications were conversing, conferring, and oral reporting. Oral reporting appeared in both subcategories and the actual classification of the oral report is dependent upon the structure of the presentation. When Aurner classifies written communications he tends to use the purpose of the communication for classification. Three of the categories used are factual, arousal, and power or persuasive communications.

DeMare (DeMare, 1979) emphasizes formal, verbal communications over other methods. He referred to the subcategory "informal" as "unorganized" communications (DeMare, 1979:38). Within the formal subcategory he identified conferences, business correspondence, memorandums and reports, magazine articles, speeches, and books. Conferences were further divided into administrative, advisory and group discussions. Memorandums and reports included not only informative and recommendations reports but also instructional reports.

A less clearly defined taxonomy is used by Wofford and others (Wofford, Gerloff, and Cummins, 1977). They refer to communication in terms of channels of communication but use the language modality concept to group the methods of communication. Specific formal, verbal communication methods listed are letters and telegrams. Informal, verbal communication examples given are telephone and face-to-face.

A dual classification method based on the language modality concept is used by Timm and Jones (Timm and Jones, 1983). They broadly assign methods of communication to spoken and written/graphical categories.

Spoken methods are exemplified by conversation, interviews, committees, and presentations. Written and graphical forms are illustrated by letters or memos, reports and posters/displays. The second method of classification used by the authors incorporates the use of formal and informal categories. Oral presentations, letters, and written reports are considered formal methods while conversation, telephonic, problem-solving meetings, informal notes and memorandums are informal.

The dual organization method is also used by Smeltzer and Waltman (Smeltzer and Waltman, 1984). In addition to the categories of written and oral communication they have included visual and "technologically mediated" communication. Written and oral examples of communications are the same as previously identified. Technological communications include electronic mail and electronic conferences. The use of the visual method is as a sub-category of formal and informal communications. Visual communications are those which call for media capable of being viewed by the receiver of the communication. Formal, visual methods include motion pictures, slides, and "chart talks." Some examples of informal, visual methods are sound/action exhibits and closed circuit television.

The authors of two texts use the language modality method of classification but give only a limited description of the methods of communication. Di Salvo (Di Salvo, 1977) focuses primarily on oral communication. He includes discussion on listening as a method of communication. Gordon and Miller (Gordon and Miller, 1983) identify three methods of communication. These methods of communication are verbal, written and technical. Verbal communication is synonymous with

other author's classification of oral communication. Examples of verbal communication cited include major presentations and interviewing. The use of informal and formal sub-categories is not apparent in either work.

Intended Receivers. The use of the intended receiver to classify communications provides a theoretical approach to discussing organizational communication. McIntosh (McIntosh, 1972) discusses communications by purpose of the communication and the intended receiver. External communication examples are mail, advertising, publications and publicity. He uses the sub-categories of formal and informal to further classify internal communications. Examples of formal internal communications closely parallel the examples given for formal, verbal communications under the language modality concept. Informal, internal communications may include bulletin boards, letters, annual reports or "house organs."

Lesikar (Lesikar, 1968) also incorporates intended receivers into his taxonomy. In addition to external and internal communications, which he terms operational, he includes personal communications. Personal communications serve no direct benefit to the organization. When providing examples of communication methods Lesikar shifts to a classification by purpose of the communication. The taxonomy used is not discussed in the text therefore the reason for shifting to a different taxonomy is not known.

Method of Diffusion. Blake and Haroldson (Blake and Haroldson, 1975) try to provide a classification of concepts on communication. They examine the channels of communication which they categorize into

formal and informal channels. Instead of identifying specific methods of communication in terms of media, they are concerned with the source from which communications are generated. Informal channels are spontaneously formed or auxiliary communications such as interpersonal networks or rumor systems. Formal channels of communication generate authoritative messages.

Purpose of Flow. In business communication publications, categorization by purpose seems to predominate. The tendency is to identify a method of communication to deal with a specific situation. Use of a text incorporating this taxonomy allows a "cook book" approach to obtaining information about a method of communication. The use of the purpose of flow classification does not always extend throughout the text. This classification is often limited to written communications. A language modality structure is frequently used to classify the remaining methods of communication.

Wolf and Kuiper (Wolf and Kuiper, 1984) classify methods of communication as non-written and written. Non-written methods include impromptu, extemporaneous, textual, memorized or combined speeches. Conversing is noted as having two modes, face-to-face and telephonic. Group non-written communications can be in small groups for problem solving or conferring. Written methods are classified by purpose. The major subcategories here are good news, persuasive and report communications. The reference to informality again arises in the context of informal reports. Dawe and Lord (Dawe and Lord, 1974) broadly categorize communications as written verbal. They identify purposes of communication as informative, persuasive or negative.

In an earlier text coauthored by Wolf and Aurner (Wolf and Aurner, 1974) they held more closely to the language modality classification method and used the broad classifications of written and oral communication (Wolf and Aurner, 1974:121,160). Examples of oral communication remained essentially the same in the later text; however, the examples of written communications closely followed the modality taxonomy. Written methods they noted are letters, notes, memorandums, news releases, interoffice messages, telegrams, cablegrams, and radiograms. Reports are classified as either informal or semiformal. Methods of communication that do not appear frequently in other texts are reply cards, postal cards and forms. The use of classification by purpose is evident since they identified methods of communication as goodwill, inquiring, informing, and persuasive (Wolf and Aurner, 1974:26).

A slightly different subclassification of correspondence is used by Hay (Hay, 1965). Business letters are classified as requests (direct and indirect), yes letters, no letters, and goodwill letters. Other methods of written communication, such as reports, graphic data, and policy statements, are classified by language modality. Devlin (Devlin, 1968) uses a similar classification scheme as Hay for letters but instead of yes or no letters he uses a good-news/bad-news classification. When classifying reports he chooses to use the sub-categories of informal and formal. Examples of verbal (oral) communications are given as face-to-face and through the telephone.

A method of classification by purpose often used in business communication writing is to identify the specific purpose of

correspondence. Cornwell and Manship (Cornwell and Manship, 1978) give examples of letters as request for information, orders for merchandise, letters about people and claims. These types of letters are then categorized as deductive, or direct, and inductive, or indirect. Janis (Janis, 1964) notes that letters may be utility, credit and collection, complaint and adjustment, job applications, persuasive, and goodwill. Reports are also classified according to purpose. They may be periodic, progress, inspection, suggestions, recommendations, proposals, minutes, resolutions, or citations.

One of the more comprehensive classifications of written communications by purpose is found in a work by Menning and Wilkinson (Menning and Wilkinson, 1967). Their taxonomy uses the following form:

Neutral and Good News Messages	Disappointing Messages
Direct Inquiries	Refusals
Favorable Replies	Delays
Sales	Adjustment Refusals
Orders	
Acknowledgments	Persuasive Messages
Credit	
Claims	Requests
Adjustments	Sales
	Collections
Reports	
Analytical	
Memorandum	
Letter	

Raymond Lesikar (Lesikar, 1982) shifted to a different taxonomy than he previously used (Lesikar, 1968). His most recent taxonomy broadly classifies communications as written or spoken. Written communications may be direct letters such as orders or inquiries or the communications may be indirect as in the case of bad news or persuasive

letters. Written reports are classified as shorter or longer, formal reports. His classification of written reports and spoken communications tends to follow the language modality concept.

The taxonomy used by McIntosh (McIntosh, 1972) has been examined previously under the intended receiver method; however, he also incorporates a classification by purpose of flow to classify written communication. The types of communication he cites are communications whose purpose is to pacify, anger, claim or adjust, grant or turn down credit, get a job, sell collect money, and to build good will.

Classification of meetings has been approached by Gordon (Gordon, M., 1981) by purpose of flow. The meeting types he identified are the information meeting, meetings to solve problems and make decisions, creative meetings, and teaching or training meetings.

Summary of Taxonomies. It is evident from the preceding review that there are many different taxonomies used to classify methods of communication. A standard taxonomy was not found during an extensive review of business communication texts. The same author may even use different taxonomies in different editions of his texts. Given that there is no standard taxonomy, use of a specific taxonomy is left to the researcher. Most of the taxonomies used by the authors of business texts did fall into one of the taxonomies discussed by Goldhaber (Goldhaber, 1986). Though a standard taxonomy was not found, the attributes of the methods of communication were still identifiable. Attributes associated with many methods of communication are discussed in the following section.

Attributes of Communication Methods

Identification of communication attributes can best be approached by reviewing elements associated with messages categorized by purpose of flow and linguistic modality. Even so, the attributes of communication methods do not necessarily apply to only one method or taxonomic group.

Purpose of Flow Attributes. Messages sent to achieve a purpose frequently use the letter as the method of transmission. Goodwill letters must establish a positive tone in the mind of the reader. Hay (Hay, 1965) views the goodwill letter in the context of a selling tool. Direct selling is to be avoided and the actual motive of the message must be concealed. Personalization is an important attribute. To achieve goodwill the tone of the correspondence needs to be sincere. Menning and Wilkinson (Menning and Wilkinson, 1967) show similarities in their definition of attributes for the goodwill message in that they consider tone, sincerity and service attitude to be the cornerstones of the message. They hold that tone is set through subordination of the senders opinion, avoidance of preachiness and courtesy. Sincerity can be achieved by avoiding gushiness, exaggeration, and excessive familiarity. Achievement of a service attitude is an abstract concept that can be attained by showing that concern for the receiver goes beyond profit.

Messages which closely parallel the good will messages are messages which give a "yes" reply. Statement of the good news first is an attribute noted by Hay (Hay, 1965). If there is some unexpected, but related, news this should be brought out. Lesikar (Lesikar, 1968) refers to the yes message as a favorable response. Again, the good news

should be presented first. If there is any bad news it should be subordinated. The situation that caused the response should be restated. Additional comments which might enhance goodwill can be included. A cordial closing is desired. The concept of placing the good news first is also emphasized by Timm and Jones (Timm and Jones, 1983). Additionally, they write that the essential idea should lead.

Persuasive messages are often used in a sales environment and are intended to change the reader's way of thinking (Dawe and Lord, 1974:120). Hay's (Hay, 1965) approach to persuasive letters is to ensure that proof of the merits of the proposal are included and that a common interest is cited. A different set of attributes is noted by Lesikar (Lesikar, 1968). Gaining the receiver's attention in the opening and a statement of the objective near the beginning is considered important to Lesikar. The closing of the message should include the action desired. Menning and Wilkinson (Menning and Wilkinson, 1967) state the use of a "you" viewpoint and adaptation to the receiver through reference to common interests are attributes. They also stress the importance of concentrating on positive ideas and not letting the receiver get the feeling that he has choices. When discussing specific types of persuasive messages, such as requests and sales Menning and Wilkinson are concise in listing the attributes. Requests should begin with an item of interest to the receiver. The viewpoint of the receiver of the message should be kept in the message. Negative statements can only be used with caution. In the end, the desired action from the receiver must be asked with confidence. The opening of a sales letter is critical and it must be both effective and

economical. Statements made in the opening must be backed up by a persuasive description. Emphasis of the selling points must be chosen carefully. References to the price should be kept to a minimum. The request for action be specific and asked with confidence. Janis (Janis, 1964) writes that the receivers interest must be gained and maintained. The receiver's motives should be exploited. A description of the idea of product must be sufficiently detailed and the sender's claims have to be backed by proof. In the end, the reader should receive a prompt to act. Influential messages are described by McIntosh (McIntosh, 1972) as needing the proper format, style and techniques. His approach is to start broadly and then narrow to the subject intended. Effective use of headings to identify the topics is an attribute needed in messages of this type. The style of the message should give the attitude that the sender is one with the receiver. Use of short sentences and paragraphs are techniques that he recommends be incorporated. Timm and Jones (Timm and Jones, 1983) see the use of positions of emphasis as important. Personalizing the message and relating the benefits to the receiver are also aides to effectiveness. Objections should be foreseen and answered for the receiver. Throughout the message an action tone should be maintained and the closing should specify the action wanted from the receiver.

Dawe and Lord (Dawe and Lord, 1974) state that messages with a negative purpose should communicate the message tactfully and in such a manner as to gain the receiver's support for the negative aspect. This is accomplished by subordinating the negative by emphasizing the positive and concealing the unpleasant thoughts in the text. Ideas that

the sender feels the receiver is interested in should begin and end the message. A refused request may be considered a negative message. Lesikar (Lesikar, 1968) ascribes attributes to this type of message similar to Dawe and Lord. The beginning should be buffered and a common area of interest expressed. The reason for the refusal needs to be developed logically. With discreet construction, the reason for the refusal can be obvious. A pleasant closing is desired. The use of a buffered beginning is also an attribute noted by Menning and Wilkinson (Menning and Wilkinson, 1967). They further specify that the buffering should have a pleasant tone. The rationale for the negative response should have a logical flow with justifying reasons. Negative wording should be avoided but the negative message must be unmistakable though subordinate. The receiver needs to have the feeling that the sender is still interested and a pleasant ending may help achieve this. Cornwell and Manship (Cornwell and Manship, 1978) hold to the philosophy that the opening should be neutral but related to the situation. The reasoning must be substantiated. The closing should leave no doubt about the sender's response. Timm and Jones (Timm and Jones, 1983) believe that the negative aspect should be deferred and the reasoning for the negative reply be given first. The neutral opening statement and a positive closing should be a characteristic of the message. The "no" message identified by Hay (Hay, 1965) is synonymous with the negative message. He contends that before the bad news, a satisfying reason for the negative response should be given. If possible, positive comments which balance the no message should be included.

Communications may be used only as a means to transfer information without positive or negative connotations. Dawe and Lord (Dawe and Lord, 1974) refer to these messages as informative in nature. The style of such messages should be direct and succinct. To be effective, the communication must have meaning to the receiver and be useful. Avoidance of misassumptions by being accurate is important and the more important facts should come first. Consideration of the receiver is an attribute that needs to be incorporated. Negative words are to be avoided. Lesikar (Lesikar, 1968), when discussing inquiries or acknowledgements, stresses that the subject should be made known at the beginning and background information should be given if applicable. A friendly closing is preferred. Neutral and goodwill messages are placed in the same category by Menning and Wilkinson (Menning and Wilkinson, 1967). A consistent attribute is to get to the point of the message quickly. Conciseness is an aide to understanding and the cordial closing is desirable.

Attributes Not Specific to the Purpose of Flow. There are many characteristics, attributes, which may be incorporated in messages to make the message more effective. Within texts on business communications the authors list a wide spectrum of such attributes. From author to author, the attributes for each method of communication differ depending on the taxonomy used by the author. A relatively consistent basis for reviewing what the literature has to say about the attributes of communications can be approached by looking at the attributes often cited in business texts for messages in general. The attributes of oral communications and written communications differ in

certain key areas but they often overlap. The literature review of attributes presented here covers many attributes and is intended as an illustration of the variation of opinions.

Effective style in a message has been described as possessing the characteristics of directness, succinctness, forcefulness and understandability (Dawe and Lord, 1974). DeMare (DeMare, 1979) implied that style for an article should be directed towards creating a readable, easy, flexible and colorful work. Style may be classified as formal or informal. The use of an informal style is preferred in business communications (Devlin, 1968). The informal or conversational style is also noted by Lesikar (Lesikar, 1968). Additionally, he recommends that a "you" viewpoint be used. Style can also be used in a broad sense to include many attributes relating to the message. Topic coverage, conciseness, variation of sentence pattern, emphasis and interesting content are all elements of style (Menning and Wilkinson, 1967). Menning and Wilkinson (Menning and Wilkinson, 1967) include the use of white space and figures as contributing to effective style while McIntosh (McIntosh, 1972) considers the use of punctuation to guide the reader an element of style. Assuming the viewpoint of the reader is important to McIntosh.

Tone establishes the receivers frame of mind and can be set through courtesy, good tempo maintenance, and pleasantness (DeMare, 1979). Hay (Hay, 1965:36-46) places strong emphasis on a positive tone. Avoidance of negatives, use of positive words, and courtesy can help achieve a positive tone. Devlin (Devlin, 1968) discusses tone in terms of formal and informal, much the same as he discusses style. He uses the term

finesse (Devlin, 1968:53) to describe attributes other authors use to describe tone. Among these attributes are diplomacy or courtesy, service attitude, and positiveness. Lesikar (Lesikar, 1968) is quite specific on how to set the proper tone. He states that a lecture attitude is harmful, the communication should be written directly to the reader, anger should be avoided, and the sender should be sincere. Avoidance of lecturing to the receiver is a component of tone mentioned by Menning and Wilkinson (Menning and Wilkinson, 1967). When discussing collection of debt letters they encourage the writer to fit the tone to the circumstances. Consideration of the reader, positiveness, avoidance of abrasiveness and preachiness, are attributes noted by Timm and Jones (Timm and Jones, 1983).

The first impression given to a reader is through the format or physical appearance of a message (Wolf and Aurner, 1974:121). Devlin (Devlin, 1968) cites the use of ample margins, short paragraphs, and tabular listing of important points as considerations when setting the format. Layout of graphs, tables and charts in reports is noted by Lesikar (Lesikar, 1968). He mentions that graphics should be close to the text and that title captions should be used. The form of a memorandum should incorporate neatly arranged headings (Menning and Wilkinson, 1967). Janis (Janis, 1964) stresses following conventions in the use of paper, margins, dates, and addresses. The arrangement of thoughts in the message are listed by McIntosh as an element of format with effective use of headings. Wolf and Kuiper (Wolf and Kuiper, 1984) count appearance of the message in the same category as accuracy, coherence, clarity, conciseness, and courtesy.

The unity of a communication is related to the conveyance of a single idea in a message. Not only must the message convey one idea, but the paragraphs and sentences within the message must deal with a single thought (Aurner and Wolf, 1967:43). In oral communications, Wolf and Aurner (Wolf and Aurner, 1974) cite unity of the message as a component of structure. The composition of paragraphs around one idea is a general principle of business writing according to Lesikar (Lesikar, 1968, Lesikar, 1982).

The arrangement and linking together of ideas in a message are essential elements of coherence (Wolf and Aurner, 1974). Arrangement includes the concept of parallelism of ideas besides attentive placement of words (Aurner and Wolf, 1967:46). Not only should words be in an effective order but ideas should be presented logically and the relationship between ideas must be shown (Janis, 1964). Wolf and Aurner (Wolf and Aurner, 1974) encourage the repetition of key words or phrases and the use of transition words/phrases to link ideas together. Lesikar (Lesikar, 1968) gives examples of transitional words such as "in addition, besides, and also" which when combined with demonstrative pronouns (this, that, these, those) aide in coherence. The format of a report may also contribute to coherence through the use of an introduction, conclusion, and summary of the report material.

Emphasis allows the communicator to bring the main points of the message to the attention of the receiver. An obvious technique for achieving emphasis is to state the idea prominently (Aurner and Wolf, 1967). Other techniques such as repetition, use of slogans, a forthright statement that the idea is important, or mechanical methods

such as underlining can be used to emphasize the idea. In much the same manner that effective word order can increase coherence, word order can give emphasis (Wolf and Aurner, 1974). Placement of ideas to achieve emphasis can best be done by placing them at the beginning or ending of a message (Lesikar, 1968). Emphasis is synonymous with force. Janis (Janis, 1964) holds that a communicator should attract attention to the idea from the beginning. The message should conclude decisively.

The ability of the receiver to follow the thought is a measure of message's clarity (Aurner and Wolf, 1967:57). Clarity in a message begins with planning, makes use of emphasis, requires careful selection of words, and is aided by the conventional use of language (Wolf and Aurner, 1974). Menning and Wilkinson (Menning and Wilkinson, 1967) discuss clearness of communications as being easy to read, possessing unity, and accurate. Elements of clearness, according to Janis, (Janis, 1964) are knowledge of the subject, use of exact words, adaptation to the receiver and avoidance of ambiguity. Timm and Jones (Timm and Jones, 1983) hold similar views on clearness but add the admonition to be cautious with infrequently used words.

Grammar refers to the use of the language's rules. Adherence to the conventions of language structure is noted by Janis (Janis, 1964) and Wolf and Aurner (Wolf and Aurner, 1974). Cornwell and Manship (Cornwell and Manship, 1978) count use of simple sentences, use of the active voice, and parallelism as items of special grammatical interest. Grammatical content should be checked closely during the editing stage, according to Smeltzer and Waltman (Smeltzer and Waltman, 1984). Use of

accepted grammar is also noted by Lesikar (Lesikar, 1982:503) on his check list for effective spoken communication.

Concreteness in communications allows the receiver to positively know what the sender is trying to communicate. DeMare (DeMare, 1979:18) refers to concreteness in writing as specifying a number or providing a variety, of pertinent examples with which the reader can associate. In discussing the general principles of writing, specifically, care in word choice, Lesikar (Lesikar, 1968, Lesikar, 1982) stresses using concrete words. Cornwell and Manship (Cornwell and Manship, 1978) use the term concreteness in conjunction with conciseness and completeness. Use of concrete words can aide in achieving a conversational tone (Timm and Jones, 1983).

For a message to be effective it must not be distorted, promote misconceptions, or contain misassumptions (Dawe and Lord, 1974:79) or more simply put, the message must be accurate. Inaccuracy can arise from inattention to detail (Aurner and Wolf, 1967) and may manifest itself in incorrect or incomplete data (Wolf and Aurner, 1974). Cornwell and Manship (Cornwell and Manship, 1978) refer to the trait of accuracy as correctness. Attention to the accuracy of the communication contributes to the credibility of the message. Other factors affecting credibility are noted by Timm and Jones (Timm and Jones, 1983) as appearance and logical reasoning.

Economy in communication is synonymous with briefness and requires the sender to use moderation in developing the message (Aurner and Wolf, 1967). Characteristics relating to economy are noted by Lesikar (Lesikar, 1968) when discussing the general principles of business

writing. Quickly making the main point, avoidance of unnecessary phrases, and wariness of repetition all enhance economy. Related to economy is the concept of conciseness. Janis (Janis, 1964) states that unnecessary details should be left out and that wordy phrases should be eliminated or at least shortened.

Organization in communications is related to coherence and unity. Di Salvo (Di Salvo, 1977) mentions organization as a specific attribute of oral reporting. Hay (Hay, 1965:410-414) writes that organization is the foremost consideration in an oral presentation. Structuring of the oral message is seen by Wolf and Aurner (Wolf and Aurner, 1974) as incorporating unity, economy, proper grammar and maintenance of the direction of the conversation. Menning and Wilkinson (Menning and Wilkinson, 1967) consider organization of the memorandum as stating the main point first, stating how the problem has been solved, considering the alternatives, and establishing logical sequencing. Development may be used to describe organization because systematic discussion of subjects is a characteristic of development (Janis, 1964) and organization. Smeltzer (Smeltzer and Waltman, 1984) identifies organization of material or having a systematic approach as essential attributes of interviews, meetings, and telephone communications.

Communication preparation takes on special importance in conferences (Hay, 1965:410-414). DeMare (DeMare, 1979:54-60) associates preparation with administrative, advisory, and group discussion conferences. Planning in advance and providing the plan or agenda to the participants is encouraged (Gordon, M., 1981:50-51, Wolf and Aurner, 1974). When formulating the plan one should seek the advice of others

when appropriate (Wolf and Aurner, 1974). Smeltzer (Smeltzer and Waltman, 1984) includes in planning the necessity to take care of the details such as the meeting room and visual aides. Conference and interview preparation is also noted by Lesikar (Lesikar, 1982) but he also adds the obvious statement that the plan must be followed.

Readability is frequently mentioned as an attribute of written communications (DeMare, 1979, Hay, 1965, Cornwell and Manship, 1978, Timm and Jones, 1983). Simplicity is a concept that is often associated with readability. Short sentences and words with few syllables are elements of readability according to DeMare (DeMare, 1979). Lesikar (Lesikar, 1968) also writes that short sentences are an aide to constructing sentences that communicate effectively. The use of simple, short words in report writing is encouraged by Menning and Wilkinson (Menning and Wilkinson, 1967). The use of personal pronouns may also aid in achieving readability (Cornwell and Manship, 1978). The use of short sentences or words may not be appropriate in all circumstances. Janis (Janis, 1964) suggests that regulation of sentence length is one of several means of communicating with simplicity. Unity, grammar, parallel structure and use of the active voice all help make a communication easy to understand.

The time frame in which a message's idea is taken can be important to the receiver. Memorandums typically deal with matters of immediate concern to the receiver (Dawe and Lord, 1974:382). A logical statement is made by Gordan when he relates that the information presented at an information meeting should be timely and informative (Gordon, M., 1981).

One of the most frequently stated attributes of communications, oral and written, is consideration of, or adaptation to, the receiver (Dawe and Lord, 1974, Aurner and Wolf, 1967, Hay, 1965, Lesikar, 1968, Menning and Wilkinson, 1967; Janis, 1964; McIntosh, 1972; Cornwell and Manship, 1978; Gordon and Miller, 1983; Lesikar, 1982). Consideration of the reader involves including items of common interest and adapting the formality and complexity of the language used to the receiver (Hay, 1965). The communicator should consider the message itself and evaluate the environment of the receiver (Wolf and Aurner, 1974). Lesikar (Lesikar, 1968:101) states that communications must be adapted to how the receiver mentally perceives his environment. Consideration of the reader adds to the persuasiveness of messages if the sender relates common experiences and strives to personalize the message (Menning and Wilkinson, 1967). Closely related to adaptation to the receiver is active listening.

The attribute active listening is applicable to two-way communications but can be controlled by the sender of the message. The sender looks for responses from the receiver and reacts to them. As a receiver of a message, one should assist the sender by active listening. Active listening requires empathy with the sender, feedback on what perceptions are being created by the sender, and feedback on the content of the message (Di Salvo, 1977:96). Active listening allows the sender to more readily adapt to the receiver.

Oral or spoken communications have attributes in addition to the ones already discussed. These attributes arise since communication is affected by the physical, body and vocal, characteristics of the

communicator and the surroundings in which the communication occurs. Some physical traits are mannerisms, loudness, voice pitch variation and tempo (DeMare, 1979:25-31). Cornwell and Manship (Cornwell and Manship, 1978) stress the use of a fast delivery rate (tempo). Visual aides can also enhance a spoken message (Hay, 1965; Aurner and Wolf, 1967; Cornwell and Manship, 1978). Telephone communications are restricted in their delivery because the sender is not able to use physical characteristics other than voice variation. When using the telephone prompt identification of the caller, an effective opening statement, and use of voice tone can enhance the communication process (Smeltzer and Waltman, 1984). Aurner and Morris (Aurner and Wolf, 1967) include having the information to be discussed available quickly when communicating by telephone. Whereas telephonic communications are restricted in interpersonal relations, conferences provide an intense environment for interaction. DeMare (DeMare, 1979:54-55) emphasizes that restriction on the number of participants is important. Because of the need to control the groups interaction, the leader should exercise control and guide the conference but should not dominate the decision process. The results of a conference should come from member participation and reflect a reconciliation of opinions (Smeltzer and Waltman, 1984; Di Salvo, 1977; Gordon, M., 1981).

Evaluation of Communications

The effective use of communications can be a significant factor in the success of a program. The skill a program manager shows in communicating with the user is not so dependent upon how the

communications occur but the degree to which they occur (Baumgartner, Brown, and Kelly, 1984:31). User participation (through communication) in the program changes with the maturation of the program (Farrow and Robey, 1982:76). A commonly held belief among program managers is that users should be involved from the beginning. One method of gaining their involvement is through their membership on a systems team, whether full time or part time (Multinovich and Vlahovich, 1984:10). Involvement of users is an aid in avoiding barriers to communication, a prime concern of the program manager. Once involved on a team, the different backgrounds of the user, program manager, and development personnel can amplify information distortion and overload (Multinovich and Vlahovich, 1984:12). If barriers to communication arise identification of these barriers can be a difficult exercise.

The use of audits to evaluate communications has been the subject of extensive work by communications professionals. Many audits exist to evaluate different aspects of organizational communications (Goldhaber, 1986:403). Several benefits of communication audits have been suggested: (Goldhaber, 1986:400-401)

- 1) To compare communications before and after the initiation of new communication programs,
- 2) To evaluate the effect of programs,
- 3) To compare the data from an early survey and a survey done after organizational restructuring,
- 4) To define the organizational structure so that reorganization plans can be more successfully implemented,
- 5) To identify important communication subgroupings before a reorganization,

6) To identify communication costs, and

7) To aid in the development of communication training programs.

Goldhaber discusses three communications audits in detail to enable the reader to understand the intent of the different audits. The first of the audits he addresses is the Greenbaum Conceptual Structure (Goldhaber, 1986:403-410). Greenbaum's procedure is a two stage process. The first stage is a general appraisal of the communication system and the second stage is an evaluation of specific communication activities. The areas examined by the Greenbaum method are listed on Table 2-1 (Goldhaber, 1986:404).

Table 2-1

Areas of Communication Appraisal

<u>General Communications</u>	<u>Specific Activities</u>
Objectives, plans, policies	Nature, objectives
Implementation methods	Performance criteria
Measurement methods	Procedural instructions
Organizational situations	Standards of performance
Supportive communications	Activity factors
	Supportive communications

The two stage procedure allows the investigator to determine how well the complete communications system is operating and the effectiveness of specific activities.

The International Communication Association (ICA) developed an audit to fulfill a need for a standardized method of evaluating organizational communications (Goldhaber, 1986:410). The audit, which

was discontinued from use by the ICA, had five parts. These parts could be used individually or as a package. The audit's parts were:

- 1) a questionnaire survey to evaluate the current status and the perceived ideal status of communications
- 2) an interview to verify the findings of other sections of the audit
- 3) network analysis to show communications between individuals in their department
- 4) a communications experience survey to identify critical communication episodes
- 5) a communication diary which supplied data on actual communications patterns

An audit heralded as being simple, fast, and inexpensive was developed in Finland in 1974. The name of the procedure is the LTT audit, with no explanation of the abbreviation given (Goldhaber, 1986:422). The audit is administered by a group within the organization. The audit uses a standard questionnaire. After the audit is done, the completed questionnaires are sealed and sent to a central LTT organization which prepares reports showing the results of the audit. The developer of the LTT audit, Osmo Wiio, has updated the original audit to a version known as the Organizational Communication Development (OCD) audit (Goldhaber, 1986:426). The OCD consists of nine sections. Eight of the sections request the respondent to evaluate communications using a five point Likert scale. The other section requests information on one to three most negative aspects of organizational communications.

Audits aimed at program management generally have only given cursory attention to communications. Communications within the program management organization and with the user have not been subjected to rigorous evaluation. In her description of a program management audit Allen concluded that communication skills are essential (Allen, 1986a:15). The audit developed by Allen, to be used by the program manager, addresses communication as a single check to be completed (Allen, 1986b). Kerzner (Kerzner, 1982) proposed a problem identification checklist to be used by a program manager. Here, communications within the program management organization are addressed in detail (Kerzner, 1982:643). The participation of users touches on the communications between the user and functional members of the program management team (Kerzner, 1982:647).

Professor John Fielden of Harvard University has developed a tool that allows a manager to evaluate his or her written communications (Fielden, 1973). He addresses four major aspects of communications. These aspects are readability, correctness, appropriateness, and thought. The format of the tool (inventory) is a checklist. Within each major aspect he lists subcategories and descriptions of areas in a communication which require attention. For example, under readability he lists familiarity of words as a subcategory. Items to guard against are inappropriate jargon, pretentious language, and unnecessarily abstract words. (Fielden, 1973:480)

This researcher sees a significant shortcoming in program management audits and the inventory proposed by Fielden. The shortcoming is that the audits are essentially checklists calling for

yes or no responses by the program manager. There is no provision for external review of the program manager's performance either in general management or communications with the user. The lack of emphasis on communications is not a fault of authors of program management audits because the audits are intended to act as a reminder list for the entire management process. Yet, the importance of communications in program management requires that a method of evaluating the presence of effective communications be developed. The communications throughout the program management organization should be of concern to the program manager, but the demands on his time limit the effort he would be willing or able to expend. The importance of communications with the user indicates that evaluation of communications with the user would provide the most benefit to the success of the program.

It is easy to state the importance of communications and quite another thing to ensure that communications with the user are effective. A program manager, who is also a logistics manager, must verify that his results meet the objectives. This is as true in communications as in the engineering of the product design. The program manager must ensure that communications are effective (Merchant, 1984:12). Deane Carter proposed a tool for evaluating the planning and control factors involved in an information system (Carter, 1976). The intent was to predict the success of the program by evaluating certain factors. The factors needed for success were identified and then ranked according to effect. A weighted value was assigned to these factors. An evaluator could then use the list of factors to grade the program. He suggested that this process could be extended beyond planning and control to other elements

of a program (Carter, 1976:26). This type of tool could be developed to evaluate the communications between the program manager and the user. By identifying the attributes which make the different methods of communications effective and weighting their importance, an evaluation tool could be developed. Communication with the user is essential to program success. The program manager must be able to evaluate the effectiveness of these communications (Multinovich and Vlahovich, 1984:12). A communication evaluation tool would provide a means to do this.

III. METHODOLOGY

Overview

The methodology was designed to provide the information necessary to develop a communication evaluation tool for program managers. An extensive review of the communications literature was accomplished to determine both the methods of interpersonal communication and the attributes which make these methods effective. The relative importance of each attribute for a method was determined through a weighting instrument completed by communication professionals. Representative program managers also weighted the attributes of the methods of communication. Non-parametric statistical tests were applied to the weightings to determine if the communication professionals and program managers were able to differentiate between the attributes. The attributes which were determined to contribute the most to effective communication were used to construct a communication evaluation tool. This tool is designed to be administered by the program manager and sent to the program's user.

Justification of the Method

Literature Review. Business communications literature was used to construct the framework around which to build the tool. Previously developed communications audits provided insight into existing measures of communication. Program management literature was reviewed and confirmed the importance of communications in program management. Identification of the attributes of the methods was determined through a review of communication texts which address the structure of

communications and provided guidance on how to use a method of communication. Communication texts dealing with business communications were used extensively.

Interviews. Interviews were used to obtain the opinions of program managers on communications within their program. In addition to gaining insight into existing communication, the interviews provided information used in the development of a communication evaluation tool. The interview was used because it allowed the collection of specific information from program managers. The interview has characteristics which make it well suited for gathering information. Two of these characteristics are that its format may be very similar to a written questionnaire or very informal. However, the main advantage of the interview over the questionnaire was that the interview provided an opportunity for the person being interviewed to get clarification of the question (Goldhaber:433). Because of the judgmental nature of ranking attributes of communication methods, it was foreseen that the respondent would need a personal explanation on the intent of the research instrument. The less knowledgeable the respondent was on communications the more important it was for the researcher to explain the importance of the research and the information to be determined from the ranking of communication attributes.

Ranking Instrument. An instrument on which communication professionals and program managers assigned weights to attributes of communication methods was used. This instrument provided data essential to ranking the attributes and developing an evaluation tool. The data obtained was used in the tool to weight the communication method's

attributes. Use of a written instrument, vice an oral interview, gave the respondents time to consider their responses. Also, since the assignment of weights required some minor arithmetical calculations it was more practical to allow the respondent to have a work sheet.

Research Objectives and Questions

The purpose of this research was to develop a tool that would aid program managers in evaluating communications from the program manager to the user. Six research objectives were established to guide the research effort. A number of research questions relating to each of the research objectives were asked. The six research objectives used are:

RO-1: Identify the types of communications methods.

Specific research questions include: How does the communication literature classify the methods of communication? What are the accepted classes? What are the types within the classes? What are the specific methods within the types?

What methods of communication are directed by regulation to be used in the user/program manager link? Are the methods directed by the Department of Defense, Department of the Navy, or program office? Is there a certain time in which communications must occur? What is the directed frequency of communications? Is there guidance on how to use the methods?

What methods of communication are considered important in communications research/literature? Why are these methods important?

In what situations should these methods be used? What are the relative advantages and disadvantages?

RO-2: Define the attributes of communication methods.

Specific research questions include: What are the attributes of the methods of communication? What is the relative importance of the attributes of the methods of communication? Are communications professionals able to differentiate the relative importance of the attributes? Do program managers have a similar view of the importance of the attributes?

RO-3: Establish the importance of communications to the program manager.

Specific research questions include: What is the importance of "effective" communications to the program manager? How is "effective communication" defined in the communications literature? How do program managers define "effective communications"? How do the users define "effective communications? Is there a commonly accepted definition of "effective communications"?

RO-4 Identify meaningful measures for each of the methods of program manager/user communications.

Specific research questions include: How can communications be measured? Is an ordinal scale from effective to ineffective appropriate? Can numerical values be applied? What is a method of weighting one method over another? Has an attempt been made to develop scales for ranking communications? Is measurement a matter of degree? To what extent are the measures meaningful and to whom are they

meaningful? Do the measures reflect the program manager's concept of adequacy? Are the measures understandable to the program manager?

RO-5 Develop a program manager/user communications evaluation tool, based upon the attributes of communications methods, that can be used to evaluate communications from the program manager to the user.

Specific research questions include: Is there a reasonable amount of time a program manager would spend using the tool? How much time should it take to complete? How difficult should data accumulation be? Is a rapid response normally essential? Is there a preferred form of a communications tool? Is there a best time to conduct a communications evaluation?

RO-6: Estimate the effectiveness of the program manager/user communication evaluation tool in evaluating the use of effective communications between the program manager and the user.

Specific research questions include: Does the program manager feel the tool is useful? Is it understandable? Is it pertinent? Does it provide enough information to allow the program manager to change his communications method in a given situation? Does the program manager trust the "score" produced by the tool?

Sample Population

The sample population for this project was chosen to provide judgmental opinions. Communication professionals experienced in technical communications were solicited to weight the attributes of communication methods. The program managers were managers of aviation test equipment programs. Five program managers were interviewed.

Program Manager Population. The program managers sampled were from the Department of the Navy. Specifically, five Naval Air Systems Command program managers involved in the acquisition of avionics support equipment were sampled. The sample size of five was chosen to ensure sufficient response to use the Friedman F test when analyzing the attribute weightings. This population was selected because of the ease in identifying participants. Program managers of avionics support equipment were found to know who their user was going to be and communicated with the user during the acquisition cycle.

Communications Professionals. For the purposes of this research a communications professional was defined as an individual who had majored, at the minimum, in technical communications as an undergraduate. Additionally, individuals whose career field was in communications were considered communications professionals. Though most of the communications professionals were from an academic environment, six participants were employed by industry or the federal government in a non-academic capacity. Two of the participants were from civilian universities. The remaining participants were from armed forces academic institutions.

The communications professionals from armed forces institutions or industries with contracts with the armed forces were used in the research project because they were felt to be more sympathetic to the problems of Department of Defense program managers and the environment in which the program managers work. Communications professionals from civilian institutions were included to add depth to the weighting of the attributes of communication.

Data Collection Plan

Literature Review. A significant part of this project consisted of a literature review. That review provided the data necessary to both develop the communications evaluation tool and solidify the justification for use of such a tool. The literature was identified by using literature data base systems and then selected publications and texts were manually reviewed. The data base systems used were:

Defense Technical Information Center,
Business Periodical Index,
Reader's Guide to Periodicals, and the
Electronic index system at Wright State University

Selected publications about program management and technical communications were also reviewed individually to reduce the chance that pertinent studies may have been overlooked because of a keyword exclusion. The time frame of the search covered the past ten years. The publications reviewed were:

Technical Communication
Journal of Management Studies
Journal of Systems Management
Logistics Spectrum
Management Science
Program Manager's Newsletter
Program Manager
Research Management

The review of the literature was done in two stages. The first stage supplied the background necessary for establishing the importance of communications to the program manager. Though communication between the program's user and the Department of Defense program manager was emphasized, the literature review included civilian, government, and military program management. The keywords for the search were:

Primary Terms

Acquisition	Air Force Procurement
Army Procurement	Data Acquisition
Government Procurement	Industrial Procurement
Logistics	Management Planning/Control
Military Procurement	Naval Logistics
Naval Procurement	Procurement
Project	

Secondary Terms

Attitudes	Authority
Interpersonal Relations	Manager
Personnel Management	Project Management

The second stage of the literature review was directed towards identifying the methods of communication and their attributes. In addition to identifying the attributes of communication, the literature was also reviewed to find a means of assigning values to the attributes. Existing communication audits provided this information. In addition, methods of evaluating program performance gave some insight into procedures for assigning values to the attributes. A general review of the communications literature was accomplished using the following keywords:

Primary Term

Communication

Secondary Terms

Interpersonal	Methods
Technical	Classification
Organizational	Audit
Business	

Business communication texts were the primary source material used to identify the methods of communication. During the preliminary

literature review, the researcher noted that most business communication texts were organized so the methods of communication and their characteristics were self evident. Therefore, it was possible to extract the attributes of the communication methods from the texts based upon the author's specific listing of the attributes. During this process, the classification method used by the author was recorded and the attributes noted. A portable computer was used and the methods of communication and their attributes were entered directly into a word processing document. The methods of communication identified during the research are listed in Appendix A. The results of the review consisted of many lists of the attributes of various methods of communication. The researcher then grouped the lists according to similarities in classification. A classification structure was chosen by the researcher so the methods, types of methods and attributes of the methods of communication could be combined into the hierarchical structure as shown in Appendix B. The taxonomy used in the research is discussed in Chapter VI. Appendix C lists the attributes of the methods of communication and their sources.

Interviews. The interview process led to the collection of data in three areas. The first area included data on the relative importance of the attributes of communication methods. Of primary interest to the researcher was the weighting of attributes, as determined by communication professionals. The second area of interest was the importance ascribed to the attributes by the program managers. The third area of data collection provided insight into the program manager's views about a communications tool.

The first set of interviews were formally structured. Interviews of the experts and program managers included the same introductory material. The guide used to explain the research is in Appendix D. Both groups, communications professionals and program managers were asked if they would be willing to help in the research by weighting the attributes identified by the researcher. The program manager interview included an additional section, contained in Appendix E. These extra nine questions dealt with the program manager's use of communications, their definition of "effective" communications, and the type of information they would find beneficial from using an evaluation tool.

The first contact with the communication professionals was either by telephone or face-to-face meeting. The communication professional was contacted and an explanation of the intent of the research was provided. The communication professional was asked to participate in the study by weighting the attributes of communications methods identified during the literature review. The actual weighting of the attributes was accomplished by sending a letter to the communication professional with a listing of the attributes, see Appendix J. The communication professional performed the weighting using the instructions described in the cover letter. The cover letter sent to the communication professionals in Appendix H, and the cover letter sent to the program managers, Appendix I, differed very little in the information provided.

Attribute Weighting Instrument. The instrument used to weight the attributes of communication methods was validated by members of the faculty at the Air Force Institute of Technology. Aside from the

researcher's advisor, a communications expert and a program management expert provided a balanced review of the weighting instrument. The comments provided by the reviewers were taken into consideration when the smooth weighting instrument was prepared. Comments by one of the reviewers about the validity of the research instrument are in Appendix F. These comments concern the first cut of the instrument. The first cut of the attributes weighting form is shown in Appendix G. Appendix J is the final instrument used in weighting the attributes of communication.

The ten methods of communication were each assigned a certain number of attributes based upon the frequency with which the attributes appeared during the literature review. An upper limit of seven attribute choices per method was selected since more than this number reduces the ability of the interviewee to clearly differentiate the weights (Fenno, 1987). A blank was provided for an additional attribute, of the ranker's choice. This allowed the respondent to replace one of the choices identified during the literature review with an attribute of his own choosing. Each method of communication was allocated 100 points. The ranker's reviewed the attributes listed and assigned a portion of the points to each attribute. The total points were checked to ensure the sum equaled to 100. This method of weighting provided ordinal data that could be subjected to non-parametric statistical procedures based upon ranking the attribute weights.

Data Analysis

The ranking of the attributes were analyzed using the Friedman F Test for a randomized block design (Conover, 1980: 299). This test compares the probability distributions of several treatments. No assumptions about the population distributions or variances are called for. In addition, a statistic to evaluate the significance of one treatment to another was used. An Apple IIgs computer with the Appleworks 2.0 spreadsheet was used to do the calculations.

The treatments were the attributes of the methods of communication and the blocks were the rankers. An analysis explored whether the experts ranking come from the same population and whether the program manager rankings come from the same population.

Another Friedman F Test was done to determine whether the attribute rank averages between the experts and the program managers came from the same population. The mean of the attributes for each treatment group is the average of the ranks assigned to the attribute.

The null hypothesis for the tests stated that each ranking within a block was equally likely; in other words, the treatments had the same effects. The alternative hypothesis suggested that at least one of the treatments would yield larger observed values than at least one other treatment. The test statistic used, T2, has two terms which are A2 and B2:

$$A2 = \sum_{j=1}^b \sum_{i=1}^t [R(X_{ij})]^2$$

$$B2 = 1/b \sum_{j=1}^b R_j^2$$

$$\text{Test Statistic } T2 = \frac{(b-1) [B2 - \frac{bk(k+1)}{4}]^2}{A2 - B2}$$

where b = Number of rankers
 k = Number of attributes or attribute averages
 R = Rank sum of the j th attribute, where the rank of each measurement is computed relative to its position within the ranker's block

Rejection region: Reject the null hypothesis at the 0.05 alpha level if $T2$ exceeds the 1- 0.05 quantile of the F distribution with $k1 = k - 1$ and $k2 = (b - 1)(k - 1)$ degrees of freedom.

Assumptions: 1. The b k -variate random variables are mutually independent.
 2. Within each block, the observations may be ranked according to some criterion of interest.

A method of making multiple comparisons was used which involved the calculation of an R_a statistic (Conover, 1980: 300). This statistic is only valid if the null hypothesis has been rejected. Two treatments are considered different if:

$$|R_j - R_k| > t_{\alpha/2} \left[\frac{2b(A2 - B2)}{(b-1)(k-1)} \right]^{1/2} = R_a$$

where: R_j , R_k , $A2$, and $B2$ have been calculated previously and $t_{\alpha/2}$ is the 1 - alpha/2 quantile of the t distribution with $(b - 1)(k - 1)$ degrees of freedom.

Calculation of Attribute Weights. The attribute average was calculated as a simple average of the weights. The communication professional weights for the each attribute of a method were summed. The weight of the attribute equaled the attribute average divided by the number of rankers.

Calculation of Standard Deviations. Standard deviations of the attribute weights were calculated through the use of the following standard formula:

$$S.D. = \left(\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1} \right)^{1/2}$$

Design of the Tool

Program manager wishes were considered in the construction of the tool. Preliminary work indicated that the tool should consist of sections for each method of communication. The attributes for the method were presented in a question format with an evaluation scale following the question. The questions were worded to a non-professional communicator level and no knowledge of technical communications terms was assumed. The validity of the individual attribute questions was not tested during the research.

The ranking by the experts provides the weighting that the program manager applies to the returned evaluations. The points given by the evaluator for each attribute will be multiplied by the weighting for that attribute. The sum of the points is then compared against the maximum score and an arbitrary goal. If the total points achieved does not reach the goal, the program manager can review the attribute scores to determine which communication methods or specific method attributes might be improved to give the largest increase in the total score.

Summary

This research involved numerous research objectives. An extensive literature review was required to identify the methods of communication and their attributes. Interviews were necessary to gain the assistance of communications professionals and program managers. The data collected on the relative weights of the attributes was analyzed through the use of non-parametric statistics. Finally, a proposed communication evaluation tool was developed. Chapter IV gives a detailed analysis of the findings related to these research objectives.

IV. FINDINGS

The methodology in the preceding chapter described the process followed by the researcher in determining what the program managers wanted from a communication evaluation tool, the methods of communication to be addressed, and the attributes of these methods. A communications evaluation tool format was also discussed. Information gathered from program managers provided the basis for developing the communication evaluation tool.

Program Manager Views on Communication With the User

Interviews with five program managers provided insight into the timing, frequency, and guidance used by program managers in their communications with their users (Albrecht, 1987; Balazs, 1987; Erk, 1987; Najarian, 1987; Rice, 1987). Additionally, the interviews obtained data about the attitudes of the program managers towards having a tool to measure the effectiveness of their communications.

Of the five program managers interviewed, none knew of any directives published by the Department of Defense, Department of the Navy, or the Naval Air Systems Command which gave guidance on communicating with the user. The frequency of communication with the user ranged from three times per week to seldom or infrequently. One interviewee stated that because of the extremely broad user base of his program he seldom communicates with the end user, but he does communicate frequently with other program management activities which represent the end user of the system. When queried on the method of communication most often used when communicating with the user three of

the five cited the telephone as the primary method. One program manager cited formal, written methods as the favored method and another program manager listed formal correspondence and meetings as additional methods. Finally, program review meetings were also noted as being a primary means of communicating with the user.

Chapter II of this thesis deals with the importance of communications with the user. It was shown that communications should occur early in the program cycle. Yet all the program managers indicated that most of their communications with the user happened during the demonstration/validation phase or during production. Two of the program managers communicated most frequently with the user during the production/deployment phase, one communicated most often during full scale development, and two communicated most often during demonstration or design review. When asked about when an evaluation of communication with the user would be most effective, all the program managers responded that the conceptualization and development stages were the times they were most concerned with communications.

One of the research questions dealt with how program managers defined "effective" communications. The program managers' definitions of "effective " communication were similar to the definitions in the communications literature. One program manager stated that "the ability to convey a message to another person, and the ability to comprehend and respond to a message that is being conveyed to you" constitutes effective communication. Obtaining feedback was an important aspect of all the program managers' definitions.

Questions about the potential usefulness of a tool to help in evaluating the effectiveness of communications with the user provided excellent guidance to the researcher. Each of the program managers stated that such a tool would be useful. The strength of the responses ranged from very beneficial to beneficial if used internally by the program manager and not required by directives. One program manager further stated that, "it could provide feedback that could identify both strong and weak areas thereby giving the manager a focus for his or her attention." There was general agreement regarding the preferred form, written or oral, of the tool. All the program managers responded that a written tool would be preferable. Two program managers would also like the tool to have an oral format. While there was agreement that a tool to measure the effectiveness of communications would be beneficial, the program managers differed on the amount of time they would be willing to spend evaluating the effectiveness of their communications. Preferences ranged from one or two hours per month, to three hours per month, to four hours per month. One program manager indicated that he preferred a total program review of communications lasting up to two days either during or following critical program milestones. To allow the program manager greater flexibility, such a total review would not be conducted on a specific time schedule. During each of the interviews, it was evident that the time required to use a tool was a great concern of the program managers. Any tool developed for program managers would have to take this concern into consideration.

Selection of a Communications Taxonomy

As discussed in the literature review, there are several taxonomies in communications. One of the most widely used taxonomies is the "linguistic modality" concept. This classification system is enhanced by the subclassification of written and oral communications into formal and informal methods. Because of this system's emphasis on using the method of communication vice the purpose or organizational relationship of the communication, it was determined to be more understandable to one not trained in technical communications. More important, classification of communication as formal and informal written or formal and informal oral was the classification used by program management experts (Kerzner, 1982: 464).

Having decided upon an overall classification system, the researcher began identifying specific methods of communication within the formal and informal subcategories of written and oral communications. The intent of this effort was to reduce the methods of communication addressed by this research to those methods most likely to be used by program managers. The first step in the process was to identify the methods of communication noted during the literature review and place them in the four subcategories. Appendix A lists the methods of communication. The next step was to choose the most frequently mentioned methods of communication within each subcategory. Appendix B lists the methods mentioned most often and the number of authors who identified these methods. If a method was mentioned less than four times, it was not included in the listings. This number was an arbitrary, but reasonable cut off point. During the validation of the

research instrument, the category of bulletins was deleted. This was necessitated by the fact that only one author (Hay, 1965) listed attributes for this method. Not only was there a lack of information on the attributes for this method of communication, but the communications professional helping to validate the weighting instrument had difficulty understanding the meaning of the attributes (Weaver, 1987). The final classification structure used in this project is listed in Table 4-1. Though the subcategories "formal" and "informal" are used to categorize the methods of communication, the methods of communication on the ranking instrument do not reflect this taxonomy. The use of subcategories on the ranking instrument was replaced by examples of the method of communication. These examples may be seen in Appendix J.

Table 4-1
Classification of Methods of Communication

	<u>Written</u>	<u>Oral</u>
Formal	Reports Correspondence	Presentations (Reports) Conference/Meeting Interview
Informal	Memorandum	Conversing Telephone

To verify this listing of communication methods to ensure that they reasonably represented methods of communication used in program

management, the literature on program management was reviewed. Eight methods of communication were discovered as being representative of methods of communication used by personnel assigned to programs (Kerzner, 1982: 473). A comparison of the examples supplied by the literature and those determined by the researcher is found in Table 4-2.

Table 4-2
Comparison of Methods of Communication

<u>Literature</u>	<u>Researcher</u>
Counseling Sessions	Interview
Telephone Conversation	Telephone
Individual Conversation	Conversing
Formal Letter	Correspondence
Project Office Memo	Memorandum
Project Office Directive	
Project Team Meeting	Conference/Meeting
Formal Report	Reports
	Oral Presentation

The researcher's listing and the examples cited in the literature differ only on two methods. These two methods are program directives and oral presentations. Program directives were not used because the literature reviewed was primarily business communications and not specific to program management. Counseling sessions were interpreted by the researcher as a form of interview. The interview is a method of communication used to gather information or transmit information directly to another person. It is usually a formally structured method of communication, much like a counseling session. The number of times

directives were specifically mentioned was less than the cut off of four times. Oral presentations were mentioned by eight of twenty authors of business communications (Aurner and Wolf, 1967; DeMare, 1979; Di Salvo, 1977; Hay, 1965; Wolf and Aurner, 1974; Cornwell and Manship, 1978; Gordon and Miller, 1983; Lesikan, 1982) and therefore included in this research because they were deemed important.

Identification of Attributes of the Methods of Communication

Identification of attributes for the communication methods used by program managers was done by attentive review of the literature on business communications. As described in Chapter 3, the selection of attributes for each method was based on the frequency of that attribute being mentioned by the authors. Appendix C lists all the attributes noted during the literature review. The resulting lists are extensive for many of the methods of communications. The methodology, specifically the requirement to limit attributes to no more than seven per category, dictated that only the most frequently appearing attributes be used. Many attributes were necessarily eliminated. Since attributes were eliminated, it is important to note that the final listing is not all inclusive. While the attributes chosen may not necessarily be ideal, they are representative of the attributes most frequently encountered in the literature.

During the review of the literature, it was observed that authors often listed attributes for the broad categories of written and oral communications. To increase the flexibility of the communications evaluation tool, two more categories were added to the communication

classification system used by the researcher. These categories are writing in general and oral communications in general. These two categories were included to allow the researcher to concentrate on identifying those attributes mentioned which specifically applied to the method of communication. When selecting attributes for a particular method of communication, an attempt was made to avoid duplication of attributes between the general category and the specific method. There were situations in which an attribute listed in the general category was again listed under a specific method. This was necessary because several authors linked an attribute not only with the broad category but also a specific method of communication. The specific instances are noted in the discussion of the attributes for each method.

Writing in General. The attributes of effective written communications in general are listed in a large number of texts. For a complete listing of these attributes see Appendix C. The six attributes used in this study are listed in Table 4-3. The attribute "conciseness" occurred the same number of times as "readability," and "coherence." "Conciseness" was not included because of its close relationship to "style." The style should be succinct which is synonymous with conciseness. In the first version of the attributes ranking form, the attribute "style" specified that style should be personalized, see Appendix G. During validation, it was suggested that style should be adjusted to fit the occasion or audience (Weaver, 1987). "Personalized style" might therefore be confused with the attribute of adapting to the "reader's level." Another review of the literature showed that

references to succinct, conversational style were more prevalent than references to personalization.

Table 4-3

Attributes of Writing in General

Clarity, clearness of thought
Positive Tone
Adaptation to the reader's level
Style is succinct, conversational
Coherence, effective transition
Readability, simplicity

Written Reports. Two of the characteristics mentioned by authors when discussing reports were "coherence" and "readability" (Cornwell and Manship, 1978; Hay, 1965; Lesikar, 1968; Menning and Wilkinson, 1967; Timm and Jones, 1983). These two attributes were more frequently mentioned as attributes of written communications in general and having been noted in the general category, were therefore not repeated in the written reports method. The attribute "use of simple words" and "transition devices" have also been incorporated in writing in general along with "conciseness", "style", "adaptation" and "clearness." Several other attributes that appear with the same frequency are closely related. Examples are "clear topic identification" and the use of an "introduction, conclusion, and summary." Another example is "writing is impersonal" and "objectivity." After the first cut of the ranking instrument, the attribute "report significance is established" was excluded since the difference between it and "subject is of major

significance" was unclear (Weaver, 1987). The attributes of "written reports" are listed in Table 4-4.

Table 4-4
Attributes of Written Reports

Subject is of major significance
Extraneous material is excluded
Vital points are emphasized
Prejudice and emotion are avoided
Writing is impersonal
Present tense is used
Topics are clearly identified

Correspondence. The attributes of correspondence were selected in a straight forward manner. The seven most frequently appearing attributes were selected. One attribute, "believability," encompasses "conviction", "truthfulness", and "sincerity." The attribute "inclusion of items of common interest" was considered too closely related to "interesting message" and was not included. Though the researcher was primarily concerned with identifying the attributes related to the specific method of communication, the need to use an attribute for more than one method became apparent. Because of the limited number of attributes found under the method of correspondence and the number of times it was mentioned by business communication authors (Timm and Jones, 1983; Hay, 1965; Menning and Wilkinson, 1967; Lesikar, 1968; Cornwell and Manship, 1978) the attribute "positive tone" was included in this method. This attribute also appears in several other methods of

communication including "writing in general." Table 4-5 lists the attributes of correspondence chosen for ranking.

Table 4-5

Attributes of Correspondence

Positive tone
Interesting message
Personalized
Early statement of the objective
Cordial closing
Professional appearance
Believability

Memorandum. Seven attributes were found during the literature search dealing specifically with the memorandum method of communication, see Appendix C. Since the maximum number to be ranked was determined in the methodology as seven, all the attributes noted during the literature review are listed in Table 4-6.

Table 4-6

Attributes of Memorandum

Early statement of the objective
Format follows conventions
Alternatives presented
Positive tone
Subject of immediate interest
Accuracy
Logical sequence

Oral Communication in General. The attributes of oral communication were selected for inclusion based upon their frequency, see Appendix C. Three attributes were tied for inclusion as the seventh attribute. These attributes were "planning", "unity", and "grammar." "Grammar" was chosen over "planning" and "unity" because the last two were mentioned (Hay, 1965; Wolf and Aurner, 1974) in the context of organization of material. The attribute "grammar" was modified to "acceptable grammar" to avoid the interpretation that grammar usage must be perfect. "Acceptable grammar" takes into consideration the receiver's concept of grammar. During validation of the initial ranking form, the validator recommended using the adjective "proper" to clarify the precision desired in grammatical correctness.

Table 4-7

Attributes of Oral Communication in General

Inflection, voice quality
Organization of material
Clear, substantive objective
No distracting mannerisms
Adaptation to the listener
Enthusiasm
Acceptable grammar

Oral Presentation. The attributes associated with oral presentations are listed in Table 4-8. These attributes represent the those occurring most frequently in the literature. All of the attributes listed appeared at least twice in the literature review.

There were no ties to resolve in selection of these attributes, see Appendix C.

Table 4-8

Attributes of Oral Presentations

Adaptation to the audience
Content related to the objectives
Effective use of visual aides
Voice quality
Comprehension of report material
Naturalness in presentation
Enthusiasm

Conference. The attributes of conferences may be found in Table 4-9. In determining the attributes of conferences, a tie between the frequency of "pertinent topics discussed", "leader goes with the group decision", and "summarization of key points" had to be mediated. The attribute "leader goes with the group decision" was thought to be included in the attribute "reconciliation of opinions." The attribute "pertinent topics discussed" appeared to be too closely related to a "clear agenda" therefore the attribute of having "summarization of key points" was chosen. This attribute was interpreted to mean having a written followup to the conference. Two other attributes which were not included, "format appropriate" and "leadership," were mentioned once each and were deemed to be related to other included attributes.

Table 4-9

Attributes of Conferences

Clear agenda
Participation encouraged
Maintenance of order
Reconciliation of opinions
Schedule maintained
Prior planning
Summarization of key points

Interview. Table 4-10 lists the most frequently mentioned attributes of effective interviewing. Each of the seven attributes appeared at least twice during the literature review. Though more than seven attributes were identified during the literature review, it was not necessary to break any ties between these attributes. Four more attributes, appearing only once each, were noted in the literature review and are listed in Appendix C.

Table 4-10

Attributes of Interviews

Interviewee knows objective
Interview summarized at the end
Prior preparation of questions
Open climate
Questions are non-threatening
Record of interview maintained
Optimum time and place

Conversation. Determining the attributes of conversation was the most difficult step in this phase of the project. Only one author

(Aurner and Wolf, 1967) cited attributes specific to conversation and he only cited three. To increase the number of attributes to match the number in other methods of communication, the researcher repeated attributes which add to the effectiveness of verbal communications in general. The attributes added were "adaptation to the listener", "naturalness", "voice quality", and "acceptable grammar." In the first cut, the attribute "grammar" was not modified. Following a review of the attributes, (Weaver, 1987) the researcher modified the attribute of "grammar" to "acceptable grammar." By using the attribute "acceptable grammar", the rankers were given more flexibility in interpretation of this attribute. The attributes selected are listed in Table 4-11.

Table 4-11
Attributes of Conversations

Comments pertinent
Proper timing of comments
Appropriate non-verbal responses
Adaptation to the listener
Naturalness
Voice quality
Acceptable grammar

Telephone. The attributes of communication via the telephone are listed in Table 4-12. Two references provided insight into these attributes (Aurner and Wolf, 1967; Smeltzer and Waltman, 1984). It is worth noting that the program managers considered the telephone as a primary method of communication with the user. The attribute "courtesy"

is representative of the context in which one set of authors (Smeltzer and Waltman, 1984) had cited "avoidance of the 'hold' button" and "avoidance of having someone else place the call." These two attributes are dependent upon, in the first case, having a telephone with a "hold" button and in the second case, having someone to place the call for the caller. These two situations may not always apply in a program manager's environment. To ensure that the attributes were of a general nature "courtesy" was selected. Use of the attribute "courtesy" connotes not only being pleasant but encompasses avoiding the above two negative attributes.

Table 4-12

Telephone Attributes

Caller's identity made known
Tone of voice
Pertinent information at hand
Clarity of diction
Personalization
Effective opening statement
Courtesy

Analysis of Attributes

A key concern of the researcher was to develop a tool to evaluate the effectiveness of communications in such a way that the program manager could concentrate on those aspects of his or her communications which need the most emphasis. An important step in developing the tool was to establish weights of the attributes to meet this requirement.

Though equal weighting of the attributes would have provided a degree of prioritization, it would not emphasize the more important attributes. As discussed in the methodology, the Friedman test was used to test whether the distributions of the attribute rankings were identical. The methodology in Chapter III discussed two statistics involved in the Friedman F test. These statistics were noted as T_0 and R_a . The T_0 statistic was used to test the null hypothesis. Rejection of the null hypothesis indicated that at least two of the attributes were different and only if, the null hypothesis was rejected then the R_a statistic was used to determine which of the attributes were statistically different. If the absolute value of the difference between the two attribute rank sum was greater than the R_a statistic, the attributes were statistically different. The attributes with no statistical difference were grouped together in the following tables.

Ranking by Communication Professionals. The results of the ranking done by communication professionals did show that some attributes were more important than other attributes. The hypothesis testing portion of the methods of communication will be described separately for the communication professionals, then for the program managers and finally for comparison between the two groups. The rejection region for written communications in general occurred at a T_0 value of 2.13 and at a T_2 value of 2.14 for all other methods of communication. The weightings and the ranking of the attributes, as provided by communication professionals and program managers, are listed in Appendices K and L respectively. The rank sum shown in the following tables is the sum of the ranks from Appendices K and L. The ranks in

the weights for the attributes were calculated by dividing the weights for the attributes from the first group by the weights for the attributes from the second group.

The null hypothesis for the test was that the F value of the test was equal to the F value of the test. The F value, which was calculated from the data, was 1.04, which was greater than the critical value of 0.05.

The results of the test showed that the null hypothesis was rejected. This means that the weights for the attributes were not equal. The results of the test also showed that the weights for the attributes were not equal to the weights for the attributes from the first group. This means that the weights for the attributes were not equal to the weights for the attributes from the second group.

Attribute		Weight	
		First Group	Second Group
Attribute 1		1.0	1.0
Attribute 2		1.0	1.0
Attribute 3		1.0	1.0
Attribute 4		1.0	1.0
Attribute 5		1.0	1.0
Attribute 6		1.0	1.0
Attribute 7		1.0	1.0
Attribute 8		1.0	1.0
Attribute 9		1.0	1.0
Attribute 10		1.0	1.0
Attribute 11		1.0	1.0
Attribute 12		1.0	1.0
Attribute 13		1.0	1.0
Attribute 14		1.0	1.0
Attribute 15		1.0	1.0
Attribute 16		1.0	1.0
Attribute 17		1.0	1.0
Attribute 18		1.0	1.0
Attribute 19		1.0	1.0
Attribute 20		1.0	1.0
Attribute 21		1.0	1.0
Attribute 22		1.0	1.0
Attribute 23		1.0	1.0
Attribute 24		1.0	1.0
Attribute 25		1.0	1.0
Attribute 26		1.0	1.0
Attribute 27		1.0	1.0
Attribute 28		1.0	1.0
Attribute 29		1.0	1.0
Attribute 30		1.0	1.0
Attribute 31		1.0	1.0
Attribute 32		1.0	1.0
Attribute 33		1.0	1.0
Attribute 34		1.0	1.0
Attribute 35		1.0	1.0
Attribute 36		1.0	1.0
Attribute 37		1.0	1.0
Attribute 38		1.0	1.0
Attribute 39		1.0	1.0
Attribute 40		1.0	1.0
Attribute 41		1.0	1.0
Attribute 42		1.0	1.0
Attribute 43		1.0	1.0
Attribute 44		1.0	1.0
Attribute 45		1.0	1.0
Attribute 46		1.0	1.0
Attribute 47		1.0	1.0
Attribute 48		1.0	1.0
Attribute 49		1.0	1.0
Attribute 50		1.0	1.0
Attribute 51		1.0	1.0
Attribute 52		1.0	1.0
Attribute 53		1.0	1.0
Attribute 54		1.0	1.0
Attribute 55		1.0	1.0
Attribute 56		1.0	1.0
Attribute 57		1.0	1.0
Attribute 58		1.0	1.0
Attribute 59		1.0	1.0
Attribute 60		1.0	1.0
Attribute 61		1.0	1.0
Attribute 62		1.0	1.0
Attribute 63		1.0	1.0
Attribute 64		1.0	1.0
Attribute 65		1.0	1.0
Attribute 66		1.0	1.0
Attribute 67		1.0	1.0
Attribute 68		1.0	1.0
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Attribute 72		1.0	1.0
Attribute 73		1.0	1.0
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Attribute 75		1.0	1.0
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Attribute 77		1.0	1.0
Attribute 78		1.0	1.0
Attribute 79		1.0	1.0
Attribute 80		1.0	1.0
Attribute 81		1.0	1.0
Attribute 82		1.0	1.0
Attribute 83		1.0	1.0
Attribute 84		1.0	1.0
Attribute 85		1.0	1.0
Attribute 86		1.0	1.0
Attribute 87		1.0	1.0
Attribute 88		1.0	1.0
Attribute 89		1.0	1.0
Attribute 90		1.0	1.0
Attribute 91		1.0	1.0
Attribute 92		1.0	1.0
Attribute 93		1.0	1.0
Attribute 94		1.0	1.0
Attribute 95		1.0	1.0
Attribute 96		1.0	1.0
Attribute 97		1.0	1.0
Attribute 98		1.0	1.0
Attribute 99		1.0	1.0
Attribute 100		1.0	1.0

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DEVELOPMENT OF A PROGRAM MANAGER/USER COMMUNICATION

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EVALUATION TOOL(U) AIR FORCE INST OF TECH

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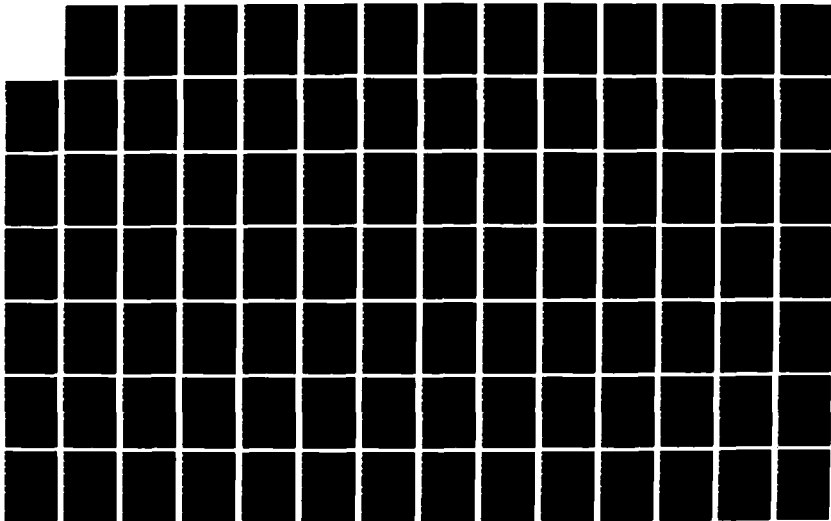
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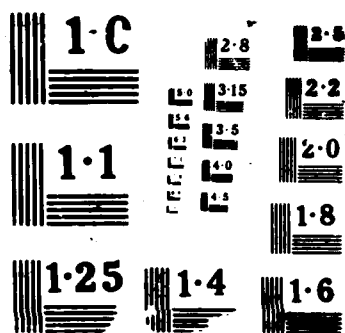
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Written Reports. The attributes of written reports fell into four closely ranked groups not including the category of "other", see Table 4-14. No rankers replaced an attribute listed with one of their own. The T2 value was calculated to be 40.98 and the Ra statistic equaled 11.94. The attribute which received the largest weighting, "topics are clearly identified," did not have the largest standard deviation. The largest standard deviation of 17.13 was found in the attribute "subject is of major importance." The result of this spread of rank was that "subject is of major importance" had the highest average weight but the third highest sum of ranks. The range of rankings for this attribute went from 0 to 70. No rankers made suggestions for the "other" attribute.

Table 4-14
Rankings for Written Reports

Attribute (in statistical groups)	Rank Sum	Weight
Topics are clearly identified	87.5	21.5
Vital points are emphasized	86.0	20.6
Subject is of major importance	79.5	22.5
Subject is of major importance	79.5	22.5
Extraneous material is excluded	72.5	14.5
Prejudice and emotion are avoided	56.5	10.6
Present tense is used	36.5	5.4
Writing is impersonal	33.5	4.9
Other	16.0	0.0

Correspondence. The T2 value for this method of communication was among the lowest of all the methods at 11.38. Even so, it exceeded the F value of 2.14 and the null hypothesis was rejected. The Ra statistic equaled 17.91 which resulted in the grouping of Table 4-15. The greatest standard deviation, 11.93, belonged to the attribute "early statement of the objective." Two of the rankers replaced given attributes with attributes of their own. Believability was replaced by "accuracy" in one case and in another case "concise" was ranked vice assigning points to "interesting message" and "cordial closing." The two attributes added are not synonymous nor were they substituted for the same attribute.

Table 4-15
Rankings for Correspondence

Attribute (in statistical groups)	Rank Sum	Weight
Early statement of the objective	92.5	26.2
Professional appearance	77.0	18.3
Professional appearance	77.0	18.3
Believability	67.0	15.5
Personalized	60.5	12.8
Believability	67.0	15.5
Personalized	60.5	12.8
Positive tone	56.0	10.1
Interesting message	54.5	9.3
Cordial closing	34.0	4.8
Other (concise, accuracy)	26.5	3.1

Memorandum. The null hypothesis of equal ranking distributions was rejected with a T2 value of 28.47. The Ra statistic for comparing attributes was 13.38. Table 4-16 shows the grouping of the attributes. The attribute "subject is of immediate interest" was statistically different from all other attributes. One ranker included the attribute "concise" as an "other" attribute. The same ranker did not assign points to the following attributes: "format follows conventions", "alternatives presented", "positive tone", and "subject of immediate interest." The average weight assigned to the added attribute is statistically less than the other attributes even though it was highly weighted by a ranker.

Table 4-16
Rankings for Memorandum

Attribute (in statistical groups)	Rank Sum	Weight
Early statement of the objective	90.5	22.3
Accuracy	85.0	21.2
Logical sequence	79.5	18.5
Subject of immediate interest	65.0	13.3
Alternatives presented	49.0	8.9
Positive tone	41.5	7.2
Format follows conventions	37.0	6.4
Other (concise)	20.5	2.4

Oral Communication in General. At least two of the attributes in this method were unequal since the T2 value was calculated to be 12.49. The Ra value was calculated to be 17.20 and the attribute

groupings shown in Table 4-17 reflect this. "Clarity, clearness of thought" replaced "enthusiasm" for one of the rankers. The ranker stated that it would be preferable to add instead of substitute attributes. The weighting the ranker gave to the added attribute is the same as he gave for "organization of material", "clear, substantive objective", and "adaptation to the reader." Since only one ranker added this category and did not give it an exceptionally large weighting, it therefore did not come statistically close to another attribute. This attribute was not included in the audit since it did not meet the established criteria for inclusion.

Table 4-17
Rankings for Oral Communications in General

Attribute (in statistical groups)	Rank Sum	Weight
Clear, substantive objective	87.0	19.8
Organization of material	79.5	17.9
Organization of material	79.5	17.9
Adaptation to the listener	66.5	14.8
Enthusiasm	64.0	13.9
Adaptation to the listener	66.5	14.8
Enthusiasm	64.0	13.9
Acceptable grammar	58.5	11.7
No distracting mannerisms	52.0	11.1
Acceptable grammar	58.5	11.7
No distracting mannerisms	52.0	11.1
Inflection, voice quality	42.0	9.2
Other (clarity, clearness of thought)	18.5	1.5

Oral Presentation. With a T2 value of 11.94, the null hypothesis, that the treatments are equivalent, was rejected for the attributes of oral presentations. Table 4-18 shows the attributes that are not significantly different, using a Ra value of 17.37. There are only two groups with statistically different rankings if the "other" attribute is not considered. One ranker replaced "naturalness in presentation" with "comfortable, confident manner." One might note that the added attribute is similar to the replaced attribute. The difference between the attributes on the ranking form and the attribute, "comfortable, confident manner", added by the ranker was not clear. The sum of ranks assigned to attributes for the "other" attribute was not sufficient enough to make it statistically equal to any other attribute.

Table 4-18
Rankings for Oral Presentations

Attribute (in statistical groups)	Rank Sum	Weight
Content related to the objectives	85.0	17.7
Comprehension of the report material	78.0	15.5
Adaptation to the audience	75.0	17.2
Enthusiasm	59.5	14.0
Naturalness in presentation	52.5	10.6
Voice quality	50.0	12.2
Effective use of visual aides	50.0	11.7
Other (comfortable, confident manner)	18.0	1.2

Conference. The attributes of conferences received the weights shown in Table 4-19. The null hypothesis was rejected with a T2

value of 10.40. With a large Ra value of 18.45, there was overlap between each of the groups of attributes except "other," which did not receive any weightings. The differentiation between "prior planning" and "clear agenda" may seem to be excessively close. "Prior planning" refers to taking care of the details of the conference. "Clear agenda" refers to the establishment and publication of the items to be discussed during the conference and when they will be discussed. The importance of having a "clear agenda" is quite marked. The standard deviation of the weightings for "clear agenda" is a low 5.79 as compared to 9.02 for the attribute "prior planning."

Table 4-19
Rankings for Conferences

Attribute (in statistical groups)	Rank Sum	Weight
Clear agenda	83.5	19.2
Prior planning	80.0	17.8
Prior planning	80.0	17.8
Participation encouraged	64.5	14.5
Maintenance of order	64.0	14.4
Participation encouraged	64.5	14.5
Maintenance of order	64.0	14.4
Summarization of key points	58.5	11.3
Schedule is maintained	53.0	11.6
Reconciliation of opinions	49.0	11.3
Other	15.5	0.0

Interview. At 9.55, the T2 value for interviews was the lowest of the methods of communication but the null hypothesis was still

rejected. The Ra value for this method is 18.41. From Table 4-20, it can be seen that the weightings given to the attributes were close. The attribute with the highest sum of ranks, "prior preparation of questions," did not have the highest average weighting. This anomaly may be due to one ranker not assigning any points to this attribute thereby skewing the average. The attribute "interview summarized at the end" and the attributes ascribed to the category "other" show a clear break in weights assigned. In the "other" category one ranker recommended that "active listening" be given a weight of 40. This high weighting increased the sum of ranks of the category "other" so there is no significant difference between it and "interview summarized at the end."

Table 4-20
Rankings for Interviews

Attribute (in statistical groups)	Rank Sum	Weight
Prior preparation of questions	79.0	15.6
Interviewee knows the objective	74.5	14.9
Questions are non-threatening	71.0	16.8
Open climate	68.5	16.8
Interviewee knows the objective	74.5	14.9
Questions are non-threatening	71.0	16.8
Open climate	68.5	16.8
Record of interview maintained	59.5	13.0
Optimum time and place	59.0	12.7
Interview summarized at the end	35.0	7.2
Other (active listening)	21.5	3.1

Conversation. The null hypothesis must be rejected for the conversation method of communication since the T2 value was equal to 11.13. With an Ra value of 17.63, the attributes fall into rank groups as shown in Table 4-21. "Adaptation to the listener" and "comments pertinent" were clearly the most significant of the attributes weighted. Two rankers included the same attribute in the "other" category. The attribute suggested was "active listening." Since two professionals felt this attribute was important to conversation it was included in the proposed communication evaluation tool.

Table 4-21
Rankings for Conversations

Attribute (in statistical groups)	Rank Sum	Weight
Adaptation to the listener	89.5	22.3
Comments pertinent	82.5	18.2
Naturalness	64.0	13.5
Proper timing of comments	61.5	11.8
Appropriate non-verbal responses	55.0	13.2
Acceptable grammar	50.0	9.8
Appropriate non-verbal responses	55.0	13.2
Acceptable grammar	50.0	9.8
Voice quality	38.5	7.4
Voice quality	38.5	7.4
Other (Active listening)	27.0	3.8

Telephone. Based on the T2 value of 10.95 the null hypothesis was rejected. Using the Ra value of 17.23, the attributes of telephonic communications were grouped as shown in Table 4-22. The large Ra value

resulted in the formation of two groups of attributes. No recommendations for "other" attributes were made. One might note that having information pertinent to the telephone call close at hand was considered to be the most important attribute. The range of weights given this attribute were from five to forty points. The largest standard deviation of the attributes occurred for "personalization" which had a standard deviation of 11.33 and a range from 5 to 50 points. If the single 50 point weighting was removed the range would narrow from 45 to 10.

Table 4-22
Rankings for Telephonic Communications

Attribute (in statistical groups)	Rank Sum	Weight
Pertinent information at hand	79.0	18.7
Caller's identity made known	78.5	17.5
Courtesy	69.5	13.5
Courtesy	69.5	13.5
Effective opening statement	59.0	13.0
Personalization	57.0	14.2
Clarity of diction	57.0	11.5
Tone of voice	53.0	11.7
Other	15.0	0.0

Ranking by Program Managers. Four program managers provided weightings for this study. Five program managers were interviewed and all five said they would provide a ranking of the attributes for the various methods of communication. Four of the five returned the ranking

instrument. With a population of four, the critical F value was 2.66 for the method "writing in general" and 2.49 for other methods of communication. The data from the program managers is in Appendix L. Comparison with communications professionals is included if pertinent.

Written Communications in General. The null hypothesis was rejected with a T2 value of 15.4. The Ra statistic was calculated to be 5.92. Using this Ra value the attributes were grouped as shown in Table 4-23. The highest standard deviation for this method was 8.02. Where the communications professionals' ranking resulted in the attribute "clarity, clearness of thought" being significantly higher than other attributes, the program managers' ranking placed it close to two other highly rated attributes.

Table 4-23

Rankings for Written Communications in General

Attribute (in statistical groups)	Rank Sum	Weight
Clarity, clearness of thought	26.5	30.0
Adaptation to the reader's level	22.0	19.5
Readability, simplicity	21.0	21.3
Readability, simplicity	21.0	21.3
Coherence, effective transition	16.0	12.5
Coherence, effective transition	16.0	12.5
Positive tone	13.0	10.0
Positive tone	13.0	10.0
Style is succinct, conversational	9.5	6.8
Other	4.0	0.0

Written Reports. The rankings of attributes for written reports were clustered into five statistically related groups. These groups, shown in Table 4-24, were formed based on a Ra value of 7.23 and a null hypothesis rejecting T2 value of 11.93. The largest range of weights occurred for the attribute "vital points are emphasized" where it was 28 with a high of 48 and a low of 20 points. The attributes "writing is impersonal" and "use of present tense" received the lowest ranking by both the professional communicators and the program managers.

Table 4-24
Rankings for Written Reports

Attribute (in statistical groups)	Rank Sum	Weight
Vital points are emphasized	30.0	30.8
Extraneous material is excluded	25.0	17.5
Topics are clearly identified	24.5	21.3
Extraneous material is excluded	25.0	17.5
Topics are clearly identified	24.5	21.3
Prejudice and emotion are avoided	19.5	10.8
Topics are clearly identified	24.5	21.3
Prejudice and emotion are avoided	19.5	10.8
Subject is of major importance	17.5	10.0
Prejudice and emotion are avoided	19.5	10.8
Subject is of major importance	17.5	10.0
Writing is impersonal	12.0	5.5
Subject is of major importance	17.5	10.0
Writing is impersonal	12.0	5.5
Present tense is used	11.0	4.3
Other	4.5	0.0

Correspondence. Though the T2 value for this method of communication was only 4.14, the null hypothesis was still rejected. The Ra value of 10.14 showed the relationships of the attribute rankings as listed in Table 4-25. Most of the standard deviations for the attributes were less than 7.00 except for the attribute "early statement of the objective" which equaled 13.22. Both the communication professionals and the program managers gave the most weight to this attribute.

Table 4-25
Rankings for Correspondence

Attribute (in statistical groups)	Rank Sum	Weight
Early statement of the objective	29.0	27.5
Believability	24.5	16.3
Professional appearance	23.5	15.0
Believability	24.5	16.3
Professional appearance	23.5	15.0
Interesting message	18.0	11.3
Positive tone	16.0	9.5
Interesting message	18.0	11.3
Positive tone	16.0	9.5
Personalized	11.0	6.5
Cordial closing	11.0	6.5
Other (Pertinent subject matter)	11.0	7.5

Memorandum. The weightings assigned for this method of communication resulted in a null hypothesis rejecting T2 value of 4.70 and a Ra value of 9.9. As with the method correspondence, the heaviest weighted attribute is "early statement of the objective." The

professional communicators also gave the most weight to this attribute. The program managers assigned almost twice the weight to "alternatives presented" as the professional communicators, 17.5 and 8.9 respectively. The least variation in the weights assigned occurred for the weights of "format follows conventions." Table 4-26 shows the formation of three related groupings with several attributes overlapping in at least two of the groups. "Other" attributes were not suggested by the program managers.

Table 4-26
Rankings for Memorandum

Attribute (in statistical groups)	Rank Sum	Weight
Early statement of the objective	26.5	23.8
Accuracy	24.0	15.0
Alternatives presented	23.5	17.5
Subject of immediate interest	19.5	13.0
Logical sequence	18	13.3
Accuracy	24.0	15.0
Alternatives presented	23.5	17.5
Subject of immediate interest	19.5	13.0
Logical sequence	18.0	13.3
Positive tone	16.0	10.0
Subject of immediate interest	19.5	13.0
Logical sequence	18.0	13.3
Positive tone	16.0	10.0
Format follows conventions	12.5	7.5
Other	4.0	0.0

Oral Communication in General. The value of T2 for this method of communication equaled 10.47 and the Ra statistic for making

comparisons between treatments equaled 7.44. The null hypothesis was rejected. Table 4-27 shows the groupings of attributes. A relatively large standard deviation of 14.72 occurred in the attribute "clear, substantive objective." One ranker assigned a weighting of ten to this attribute while another weighted it at forty-five. The range of weightings for the four lowest weighted attributes went from a range of five to eight. Three of these ranges showed a difference in weighting of only five points. The communication professionals and program managers differed in the order of the weights given to the attributes "inflection, voice quality" and "no distracting mannerisms."

Table 4-27
Rankings for Oral Communication in General

Attribute (in statistical groups)	Rank Sum	Weight
Adaptation to the listener	27.5	19.5
Clear, substantive objective	26.5	25.0
Organization of material	24.5	21.3
Enthusiasm	20.5	11.3
Enthusiasm	20.5	11.3
Acceptable grammar	15.5	8.3
Inflection, voice quality	13.5	7.5
Acceptable grammar	15.5	8.3
Inflection, voice quality	13.5	7.5
No distracting mannerisms	12.0	6.8
Other	4.0	0.0

Oral Presentation. The T2 value of 13.02 resulted in the rejection of the null hypothesis. The attributes were grouped according

to statistical significance, with a Ra of 7.01 in Table 4-28. All the standard deviations for this method of communication were less than ten. Note that the "effective use of visual aides" was not significantly different from "adaptation to the audience", "comprehension of the report material", and "content related to objectives"; whereas the communications professionals ranking did result in a significant difference. The only weighting that was close in both groups was assigned to "effective use of visual aides", 11.7 and 12.5.

Table 4-28
Rankings for Oral Presentations

Attribute (in statistical groups)	Rank Sum	Weight
Adaptation to the audience	27.0	20.5
Comprehension of the report material	27.0	20.8
Content related to the objectives	25.5	21.3
Effective use of visual aides	20.0	12.5
Content related to the objectives	25.5	21.3
Effective use of visual aides	20.0	12.5
Enthusiasm	18.5	11.3
Enthusiasm	18.5	11.3
Naturalness in presentation	12.0	7.5
Naturalness in presentation	12.0	7.5
Voice quality	10.0	6.3
Other	4.0	0.0

Conference. The null hypothesis could not be rejected for this method of communication. The T2 value was calculated to be 2.26 and the rejection region occurs at 2.49. Since the null hypothesis

could not be rejected, the Ra statistic was meaningless for making comparisons between treatments. The communication professionals could clearly differentiate between the attributes of this method of communication. A comparison of the order of the average weights given by the two groups showed that they both hold similar opinions about the relative importance of the attributes. The only difference in the two groups was that the communications professionals considered "summarization of key points" to be less important than the program managers.

Table 4-29

Rankings for Conferences

Attribute (in statistical groups)	Rank Sum	Weight
Clear agenda	29.0	20.0
Prior planning	25.0	17.5
Summarization of key points	19.0	13.8
Participation encouraged	18.0	12.5
Maintenance of order	14.5	11.3
Schedule maintained	14.0	10.5
Reconciliation of opinions	14.0	9.5
Other (Organization of subject matter)	10.5	5.0

Interview. The T2 value for this method of communication was 5.83, a comparatively low value but still enough to reject the null hypothesis. The groupings in Table 4-30 were assigned by applying a Ra value of 9.22. The highest average weighting was given to the attribute "interviewee knows the objective" and "prior preparation of questions." The communication professionals' average weightings were highest for

"questions are non-threatening" and "open climate." The importance of keeping a record of the interview was ranked higher for the program managers than the communication professionals. The largest standard deviation of 7.5 occurred for the attribute "questions are non-threatening." The attribute "interview summarized at the end" received the lowest weighting from both the communication professionals and the program managers. Additional attributes were not suggested by any of the program managers for this method of communication.

Table 4-30

Rankings for Interviews

Attribute (in statistical groups)	Rank Sum	Weight
Interviewee knows the objective	26.5	18.8
Prior preparation of the questions	26.5	18.8
Record of interview maintained	21.5	15.0
Open climate	19.5	13.8
Questions are non-threatening	18.5	13.8
Record of interview maintained	21.5	15.0
Open climate	19.5	13.8
Questions are non-threatening	18.5	13.8
Optimum time and place	16.0	11.3
Open climate	19.5	13.8
Questions are non-threatening	18.5	13.8
Optimum time and place	16.0	11.3
Interview summarized at the end	11.5	8.8
Other	4.0	0.0

Conversation. The null hypothesis was rejected for the conversation method. The T2 value was 15.09 and the Ra value was 6.53. The ranking of the attributes for this method of communication yielded

two distinct, statistically different groups as shown in Table 4-31. The program managers gave a much higher weight to "proper timing of comments" than the professional communicators, 21.3 versus 11.8. The program managers' range of weights for this attribute was only five with a standard deviation of 2.5. The weights assigned by the communication professionals had a much larger range and two of the professionals did not assign any points to this attribute. Program managers gave the highest weighting to the attribute "comments pertinent" followed by the "proper timing of comments." The communications professionals preferred "naturalness" to "proper timing of comments." In the weightings by both groups the attributes specific to conversation, see Appendix C, received high weightings.

Table 4-31
Rankings for Conversations

Attribute (in statistical groups)	Rank Sum	Weight
Comments pertinent	27.5	22.5
Proper timing of comments	27.5	21.3
Adaptation to the listener	26.5	20.0
Appropriate non-verbal responses	17.5	11.3
Naturalness	16.5	11.3
Acceptable grammar	13.5	7.5
Voice quality	11.0	6.3
Other	4.0	0.0

Telephone. The null hypothesis was again rejected. The T2 value for this method of communication equaled 7.14 and the Ra value was

8.54. One overlapping attribute occurred and that was "courtesy." The attribute "personalization" received a much higher average weight (14.2) from the communication professionals than from the program managers. Neither the communications professionals nor the program managers made suggestions for "other" attributes. The top group included the same attributes for both the program managers and the professional communicators.

Table 4-32
Rankings for Telephonic Communications

Attribute (in statistical groups)	Rank Sum	Weight
Caller's identity made known	27.5	22.5
Pertinent information at hand	27.5	20.0
Courtesy	21.5	13.8
Courtesy	21.5	13.8
Tone of voice	18.0	11.3
Clarity of diction	17.0	11.3
Effective opening statement	15.5	12.5
Personalization	13.0	8.8
Other	4.0	0.0

Rankings Between Communication Professionals and Program Managers

Similarities and differences between the weightings given the attributes for some methods of communication have been discussed in the previous sections. Of interest to the researcher was an analysis of whether the average weightings given to the attributes for a method of communication differs between the program managers and the communication

professionals. The statistical analysis used to evaluate whether this existed was the Friedman F test. Chapter III discussed the mathematical procedure involved in using this statistical technique. To compare the program manager and the communication professionals weightings the treatments and the blocks were switched. Instead of blocking on the rankers, the blocks were considered to be the attributes. The ranker groups, communication professionals or program managers, were the treatments. The average weightings for the method attributes were ranked as one or two. The rejection region and T2 statistic for each of the methods is listed in Table 4-33. Unlike the tables previously discussed, this table only shows the rejection limit for the null hypothesis and the calculated T2 value. The methods were not compared.

As can be seen from the table the null hypothesis that the treatments have identical effects could not be rejected for any of the methods of communication. Neither of the ranking groups gave higher weights to the method attributes than the other ranking group. This was significant since it tended to show that the two groups, each with different backgrounds than the other, placed similar importance on the attributes. One may also infer that the ranker's understanding of the communication attributes did not differ greatly between the two groups. The closeness of the rankings of the two groups indicated that the program managers could differentiate between the attributes to the same extent as the communications professionals. This relationship increased the validity of a communication evaluation tool for program managers based upon the weightings assigned by communication professionals.

Table 4-33

Analysis of Attribute Rankings Between the Rankers

Method of Communication	Rejection Region	T2 Value
Writing in General	5.99	0.00
Written Reports	5.59	0.13
Correspondence	5.59	0.13
Memorandum	5.59	0.00
Oral Communication in General	5.59	0.47
Oral Presentation	5.59	0.00
Conference	5.59	0.47
Interviews	5.59	0.00
Conversations	5.59	2.33
Telephonic Communications	5.59	0.12

Development of the Communication Evaluation Tool

The basic purpose of this research project was to develop a tool which could be used by a program manager to evaluate the effectiveness of his or her communications to the user. Information obtained during interviews of program managers showed that the tool should be written and need minimal time. Program managers were also interested in being able to have a means of prioritizing problems in their communications (Albrecht, 1987). These criteria were used by the researcher in developing the evaluation tool shown in Appendix M.

The literature review identified several methods of communication and many attributes associated with these methods of communication. Ranking the attributes for each of the methods provided a means of weighting the individual attributes and, therefore, allowed the attributes to be prioritized. A review of the literature also provided a format for the evaluation tool. In Chapter II a tool developed by

Professor Deane Carter for evaluating the planning and control factors involved in an information system was reviewed. Carter proposed an evaluation system using weightings obtained from a ranking and a "present rating average" scale similar to a Likert scale. In this system the evaluator circled a number from one to five on the "present rating scale" to register his or her strength of rating and this number was then multiplied by the weighting provided by the previous ranking (Carter, 1976). The user of this tool could compare the score obtained to a desired score and then use this comparison as a basis for prioritizing areas for improvement. This type of tool was written, easy to use, and allowed identification and prioritization of critical areas. These were the factors wanted by program managers for a communications evaluation tool.

The methodology used to obtain an attribute ranking fit the model used by Dr. Carter. Ideally, the sum of the weights for a method of communication would equal 100. This researcher wanted to ensure that the professional communicators had the opportunity to provide attributes of their own through use of the "other" category. The two criteria used for including "other" attributes were that two or more professionals must have identified the same attribute and that the "other" attribute must not have been statistically lower than the attributes identified by the researcher. There was only one case where these criteria were met. For the method of communication "conversation," two communication professionals suggested that "active listening" be added as an attribute. As can be seen from Table 4-21, the ranking of this attribute was not statistically different from "voice quality",

therefore "active listening" met the established criteria. The "other" attribute's ranking for two methods of communication were not statistically different from one of the researcher's attributes; however, the attributes were provided by only one communication professional. The methods of communication where this occurred were "correspondence" and "interviews." Since both criteria were not met, neither of these attributes were included in the communication evaluation tool.

Since the attributes provided in the "other" category were not used except in one case, the sum of the weightings did not always equal 100. Also, rounding the weights using a consistent rule of rounding up of values greater than 0.5 and rounding down for values equal to or less than 0.5 caused the sum of the weights to not equal 100 sometimes. To correct for these shortfalls, a rule of adding the one point of the shortfall to the lowest or central weighting within a group was used. No more than one point was added to an attribute's average weighting. This method served to create a sense of consistency in the maximum score for each method of communication. Through this adjustment, the program manager now has only to remember that the minimum score is 100 and the maximum score is 500 on each evaluation sheet. The weightings to be used by the program manager are listed in Appendix M on pages M-14 for written methods and M-15 for oral methods.

Each method has an evaluation form on a separate page to allow the program manager to tailor the evaluation. Appendix M, pages M-4 through M-13 shows the proposed evaluation forms. For each method of communication, the attributes of the method provided to the

communication professionals have been worded into a question which should be answered with "yes" if that attribute is present in the program manager's communication. Where practical, the original wording of the attribute has been kept within the question. In some cases, the attributes are reflected through the use of definitions of the attribute or synonyms of the attribute. The evaluator is asked to evaluate each attribute on a scale from one to five. This scale is marked one if the attribute is not perceived to be present or five if it is present. Upon return to the program manager, the weights may be copied onto the evaluation form and multiplied by the evaluators response. To make transcribing the weights onto the evaluation form simpler, the weights on pages M-14 and M-15 align with the attributes on the evaluation form. The sum of the weighted values provides a score for each method. Effective use of all the method attributes yields a perfect score of 500. The lowest score possible is 100.

Appendix M contains a complete evaluation package. The instructions for use of the tool are provided on page M-1 of the appendix. A proposed letter, in a Navy format, that the program manager can use as a model for a forwarding letter is on page M-3 of the appendix. The evaluation forms are on pages M-4 through M-13. The communication method weightings are on the last two pages of the appendix on M-14 and M-15.

V. Conclusions

Six objectives were identified for this research. These objectives are:

- RO-1: Identify the types of communications methods.
- RO-2: Define the attributes of communication methods.
- RO-3: Establish the importance of communications to the program manager.
- RO-4 Identify meaningful measures for each of the methods of program manager/user communications.
- RO-5 Develop a program manager/user communications evaluation tool, based upon the attributes of communications methods, that can be used to evaluate communications from the program manager to the user.
- RO-6: Estimate the effectiveness of the program manager/user communication evaluation tool in evaluating the use of effective communications between the program manager and the user.

Discussion of the Research Objectives

Each of the research objectives will be discussed in light of the data obtained through the literature review in Chapter II or the research findings in Chapter IV.

Identify the Types of Communications Methods. The communications literature classifies the methods of communication through the use of a communications taxonomy. The general taxonomy used by the researcher was developed from the literature review. In reference to the research questions on the classes of communications and the types within the classes, the literature review indicated there were two general classes. These two general classes of communication, oral and written, frequently appeared further categorized into formal and informal types. The

categories of formal and informal types of methods were adopted by the researcher. Eight specific methods of communication were identified within the formal and informal types of classes. These methods of communication were not restricted to those used just by program managers but were commonly cited in business communications literature. The review of program management literature confirmed that the criteria used to choose the methods of communication resulted in selection of methods that were representative of those mentioned specifically in the literature.

The research questions concerning regulations directing methods of communication were answered through interviews with five program managers. The interviews with program managers confirmed that they based their selection of communication methods with the user, not on formal direction, but the program manager's needs and judgment. There were no regulations which specify the timing or frequency of communications between program managers and their user.

The literature review was used to identify important methods of communication. The frequency with which a method of communication appeared in the literature was used as an indication of its importance. The relative advantages and disadvantages of the various methods were not evident in the literature.

Define the Attributes of Communication Methods. It became evident during the literature review that there were many attributes for methods of communication. A method had to be developed to reduce the number of attributes to a listing brief enough to allow the rankers to effectively

weight the attributes. A decision was made that no more than seven attributes would be considered per method of communication.

The intent of this research objective was to identify significant attributes of communication methods as a preliminary step in developing a communication evaluation tool. A literature based survey was done to identify the most important attributes of methods of communication. The relative importance of the attributes were established by having communications professionals weight the attributes for each of eight methods of communications plus weight the attributes of oral and written communications in general. The actual instrument allowed the ranker to replace one of the literature based attributes with an attribute of the ranker's choice. This provision was included to identify any significant attributes not previously identified by the researcher. In the worst case, each of the rankers could have included their own attributes. The returned instruments from the communication professionals showed that the rankers added attributes to the categories of correspondence, memorandums, oral communications in general, oral presentations, interviews, and conversations. Only three of the thirteen rankers added their own attributes. One of the three rankers added an attribute to three methods, another added attributes to four methods and the third added an attribute to only one method. In only one case, conversations, were the additions to a method communication the same for two or more rankers. The fact that ten of the thirteen respondents did not modify the attributes for a method of communication indicated that the attributes identified by the researcher were acceptable to the respondents.

Use of the Friedman F test indicated that the communication professionals were able to differentiate between the attributes. For each method of communication, at least one attribute was found to be relatively more important than another. That the communications professionals agreed on the relative importance of the attributes was not substantiated. The statistical analysis done on the communication professional's inputs shows that they were able to rank order the attributes of the methods of communication. This ranking provided the researcher with a meaningful measure of the relative importance of the attributes listed. Being able to assign weights to the attributes greatly increased the utility of the proposed communication evaluation tool.

The program managers were also able to differentiate between the attributes. There were statistical differences between at least two of the attributes for all methods except for conferences. The average of the weights given to the attributes of conferences by the program managers does closely match the weights given by the communications professionals. The only difference between the rank order of the attributes occurred because the program managers average weight of 13.8 for "summarization of key points" placed it higher in their ordering than the professional communicator's average weighting of 11.3.

The Friedman F test was also used to determine if the program managers held a similar view to the communication professionals on the importance of the attributes. A comparison of the two groups indicated that there was no difference between the rankings of the attributes

obtained from the weightings provided by the communication professionals and program managers.

Establish the Importance of Communications to the Program Manager.

The literature review established that effective communications are important to the program manager. "Effective communication" was found to occur when the receiver understood a message just as the sender had conceived the message. Program managers, when interviewed, held similar conceptions of what constitute "effective communications." Users were not interviewed to determine their definition of "effective communications."

Identify Meaningful Measures for Each of the Methods of Program Manager/User Communication. The results of the ranking by the professional communicators provided the basis for measuring the attributes. The literature suggested a method of applying these weights. The literature also gave examples of communications audits that have incorporated scales for ranking communications. The audits discussed by Goldhaber (Goldhaber, 1986) often made use of numerical scales. The literature review supplied a method of applying these weights using numerical values on an ordinal scale. Using a five point scale, a user of the communication evaluation tool could provide feedback on the perceived presence of an attribute in his or her communications. When the user's rating is multiplied by the weighting for that attribute a weighted relative score can be obtained. The program manager can use this score to compare communications with the same receiver of communications over a period of time or compute some relative measure of his or her communication effectiveness. The

measures of the attributes as determined by the communications evaluation tool are relevant and therefore significant only to the program manager.

The research questions concerning the meaning and understandability of the measures were not answered by the research. The answers to these questions are tied to research objective six.

Develop a Program Manager/User Communication Evaluation Tool, Based Upon the Attributes of Communications Methods, That Can be Used to Evaluate Communications from the Program Manager to the User. The communication evaluation tool incorporated the program managers' expressed wishes regarding the format, time to use, and ability to provide priorities. While the format is written, it may also be administered orally by the program manager. To reduce the time spent on using the tool, the program manager can tailor it to provide information on a variety of selected methods of communication. The program manager may be primarily communicating with the user over the telephone. This method of communication can be evaluated by sending only two sections of the tool to the user. These sections are "oral communications in general" and "telephonic communications". Upon return of the tool, the program manager can quickly weight the attributes and come up with a score. The program manager can then compare this score with an established goal or compare it to a prior evaluation. The evaluation tool does not give a complete inventory of communication effectiveness. It only provides feedback of several attributes for eight methods of communication plus the two general methods of communication.

Estimate the Effectiveness of the Program Manager/User
Communication Evaluation Tool in Evaluating the Use of Effective
Communications Between the Program Manager and the User. Due to time constraints, this research objective was not addressed. Evaluation of the usefulness of the proposed tool is the topic of future research.

Limitations of the Research

The analysis of communications is extremely complex. This research effort only addresses a few of the methods of communication and some of their attributes. There are other attributes for each of the methods of communication which may have more importance to the effectiveness of a particular method. Also, analysis of the attributes does not provide a means for improving communications it only shows there may be a problem. One should not examine the attributes of communications alone.

There are several aspects of a particular communication which should be addressed. These aspects include the usefulness of the communication, the purpose of the communication, the selection of the method of communication, and the network through which the communication is sent. Professor Paul Anderson prepared some insightful comments on these other aspects of communication (Anderson, 1987). The text of his correspondence is included as Appendix N. He also expressed concern over the interpretation of the attributes. The possibility exists that the various rankers perceived a different meaning for the same attribute. This type of miscommunication is the crux of misunderstanding and highlights the problem that one cannot really know what another person thinks.

Recommendations for Further Research

Several topics of interest arose during this project. One topic, which may provide significant benefit, is determining what really makes a specific method of communication effective. An effort to identify this should not restrict itself to attributes of the form or tone for there are other factors which also impact communication effectiveness. The application of a method to a specific purpose may increase the effectiveness of communications. Likewise the network through which the communication is sent may contribute to the receiver's understanding of the message.

More closely related to this research effort, the actual utility of the communication evaluation tool should be tested. Research objective six lists key questions that need to be answered. Questions about the proposed tool's value; for example, whether program managers see enough benefit to use the tool, need to be addressed. Also, does the tool help increase the effectiveness of communications? A program manager may see the tool as a help but still not achieve more effective communications.

The validity, between the program manager and his or her user, of the communication methods and their attributes needs to be investigated. The user may not interpret the attributes the same as the program manager. The translation of the attributes into questions on the Communication Evaluation Tool may have changed how the attributes would be weighted. Continued research to answer these possible problems is needed.

Summary

The intent of this research effort was to develop a tool to aid program managers in evaluating their communications with the user. A tool is proposed which may meet the evaluation needs of program managers. The tool that has been developed does not show how to correct faulty communications but only provides an indication of a problem as it is perceived by the receiver of the communication. Knowing there may be a problem is not a trivial matter. A definitive study on customer service showed that the person providing a service may not correctly interpret what the service should be. Only by asking the customer can the actual desires of the customer be accurately determined (La Londe and Zinszer, 1976). The proposed tool was developed based on the philosophy that the receiver of a communication can provide the most significant feedback to the sender.

The proposed tool is just that, only a tool, much as a carpenter's square. The square is one of many tools the carpenter uses to work with wood and each of the tools has its specific purpose. The communications evaluation tool should be considered as one of several tools the program manager should use to ensure effective communications with the user of his product.

Appendix A: Methods of Communication

Written

Oral

Formal

Report

Preliminary
Informative
Recommendation
Proposal
Company
Technical
Letter

Periodic
Progress
Inspection
Suggestion
Minutes
Resolution
Citation

Instruction
Policy Statement
Handbook
Correspondence
Management Newsletter
News Release
Magazine Article
Telegram

Report

Impromptu
Extemporaneous
Textual
Memorized
Conference
Meeting
Informative
Staff
Teaching
Training
Instruction
Interview
Negotiation
Speech
Ceremonial
Public Address

Informal

Memorandum
Postal Card
Items-of-Interest Report
Bulletins
House Organs
Annual Reports
Note
Electronic Mail
Informal/Semiformal Reports
Inter-Office Messages
Magazine Article

Conversing
Conferring
Oral Reporting
Meeting
Problem Solving
Creative
Orientation Talk
Electronic Conference
Telephone
Interview

Appendix B: Program Manager Methods of Communication

Written

Oral

Formal

Report(13)*
Correspondence(12)

Report(8)
Conference/Meeting(9)
Interview(4)

Informal

Memorandum(6)
Bulletin(4)

Conversing(6)
Telephone(5)

* Parenthesis indicates number of authors citing this method

Appendix C: Sources of Attributes of Communication Methods

Writing in General

Clarity	Lesikar, 1982; Gordon and Miller, 1983; Smeltzer and Waltman, 1984; Wolf and Kuiper, 1984; Cornwell and Manship, 1978; Timm and Jones, 1983; Aurner and Wolf, 1967; Hay, 1965; Wolf and Aurner, 1974; Lesikar, 1968; Janis, 1964
Tone	Gordon and Miller, 1983; Smeltzer and Waltman, 1984; Wolf and Kuiper, 1984; Timm and Jones, 1983; Dawe and Lord, 1974; DeMare, 1979; Hay, 1965; Devlin, 1968; Lesikar, 1968; Cornwell and Manship, 1978
(courteous)	DeMare, 1979; Wolf and Aurner, 1974; Wolf and Kuiper, 1984; Smeltzer and Waltman, 1984
(pleasant)	DeMare, 1979
(good tempo)	DeMare, 1979
(positive)	Lesikar, 1968
Consideration of the Reader	Lesikar, 1982; Gordon and Miller, 1983; Timm and Jones, 1983; Hay, 1965; Dawe and Lord, 1974; Lesikar, 1968; Janis, 1964; McIntosh, 1972; Cornwell and Manship, 1978
Style (direct)	Janis, 1964; Lesikar, 1968; Dawe and Lord, 1974; Lesikar, 1982; Smeltzer and Waltman, 1984; Hay, 1965; Devlin, 1968; McIntosh, 1972; Timm and Jones, 1983
(succinct, informal)	Dawe and Lord, 1974; Lesikar, 1968
(forceful, conversational)	Janis, 1964; Smeltzer and Waltman, 1984

Readability	Smeltzer and Waltman, 1984; Cornwell and Manship, 1978; McIntosh, 1972; Lesikar, 1968; DeMare, 1979; Hay, 1965; Devlin, 1968; Timm and Jones, 1983
(short sentences)	Smeltzer and Waltman, 1984; DeMare, 1979; Devlin, 1968; Lesikar, 1968; McIntosh, 1972; Cornwell and Manship, 1978
(few syllables)	Smeltzer and Waltman, 1984; DeMare, 1979; Devlin, 1968; Lesikar, 1968; Janis, 1964
(personal reference)	DeMare, 1979
Coherence	Lesikar, 1982; Smeltzer and Waltman, 1984; Aurner and Wolf, 1967; Wofford, Gerloff, and Cummins, 1977; Wolf and Aurner, 1974; Lesikar, 1968; Janis, 1964; Wolf and Kuiper, 1984
Conciseness	Gordon and Miller, 1983; Wolf and Kuiper, 1984; Timm and Jones, 1983; DeMare, 1979; Hay, 1965; Wolf and Aurner, 1974; Janis, 1964; Cornwell and Manship, 1978
Unity	Timm and Jones, 1983; Lesikar, 1982; Aurner and Wolf, 1967; Wolf and Aurner, 1974; Lesikar, 1968; Janis, 1964
Emphasis	Lesikar, 1982; Aurner and Wolf, 1967; Wolf and Aurner, 1974; Lesikar, 1968; Janis, 1964
Economy	Lesikar, 1982; Smeltzer and Waltman, 1984; Aurner and Wolf, 1967; Hay, 1965; Dawe and Lord, 1974; Lesikar, 1968
Accuracy	Aurner and Wolf, 1967; Wolf and Aurner, 1974; Timm and Jones, 1983; Wolf and Kuiper, 1984
Conviction	Hay, 1965; Dawe and Lord, 1974; Cornwell and Manship, 1978
Interest and originality	Hay, 1965; Timm and Jones, 1983

Completeness

Timm and Jones, 1983

Constructive

Timm and Jones, 1983

Appropriateness

DeMara, 1979

Reports (Written)

Coherence	Cornwell and Manship, 1978; Hay, 1965; Lesikar, 1968; Menning and Wilkinson, 1967; Timm and Jones, 1983
Readability	Timm and Jones, 1983; Hay, 1965; Cornwell and Manship, 1978
Problem of major significance	Dawe and Lord, 1974; Lesikar, 1968
Use of simple words	Hay, 1965; Cornwell and Manship, 1978
Use of transitional devices	Hay, 1965; Lesikar, 1968
Use of present tense	Lesikar, 1968; Menning and Wilkinson, 1967
Clearness in writing	Hay, 1965
Arrangement of sentences	Hay, 1965
Conciseness in sentences	Hay, 1965
Style	Hay, 1965
Adapatation	Lesikar, 1968
Objectivity	Lesikar, 1968
Emphasis	Menning and Wilkinson, 1967
No extraneous material	DeMare, 1979
Repetition of vital points	DeMare, 1979
Prejudice, emotion avoided	Lesikar, 1968
Writing is impersonal	Lesikar, 1968
Introduction, conclusion, summary	Lesikar, 1968
Analysis significance established	Menning and Wilkinson, 1967
Clear topic identification	Menning and Wilkinson, 1967

Correspondence

Positive tone	Timm and Jones, 1983; Hay, 1965; Menning and Wilkinson, 1967; Lesikar, 1968; Cornwell and Manship, 1978
Interesting message	Dawe and Lord, 1974; Hay, 1965; Menning and Wilkinson, 1967; Janis, 1964
Personalized	Dawe and Lord, 1974; Hay, 1965; Menning and Wilkinson, 1967
Objective known quickly	Lesikar, 1968; Cornwell and Manship, 1978; Timm and Jones, 1983
Cordial closing	Lesikar, 1968; Cornwell and Manship, 1978; Timm and Jones, 1983
Consideration of the reader	Hay, 1965; Janis, 1964
Conviction, truth, sincerity	Hay, 1965; Janis, 1964
Appearance (format and materials)	Wolf and Aurner, 1974; Menning Wilkinson, 1967
Items of common interest	Hay, 1965

Memorandum

Early statement of objective	DeMare, 1979; Wolf and Aurner, 1974; Menning and Wilkinson, 1967; Timm and Jones, 1983
Positive adjustment of tone	Dawe and Lord, 1974; Cornwell and Manship, 1978; Timm and Jones, 1983
Subject of immediate interest	Dawe and Lord, 1974; Aurner and Wolf, 1967
Sequence (coherence, logic)	Menning and Wilkinson, 1967
Format (follows conventions)	Menning and Wilkinson, 1967
Alternatives presented	Menning and Wilkinson, 1967
Accuracy	Dawe and Lord, 1974

Oral Communication in General

Adaptation, rapport	DeMare, 1979; Wolf and Aurner, 1974; Gordon and Miller, 1983; Hay, 1965; Di Salvo, 1977; Cornwell and Manship, 1978; Lesikar, 1982
Inflection (pitch variation)	Lesikar, 1982; Cornwell and Manship, 1978; DeMare, 1979; Hay, 1965; Di Salvo, 1977; Gordon and Miller, 1983
Substance, objective	Gordon and Miller, 1983; Cornwell and Manship, 1978; Wolf and Aurner, 1974; DeMare, 1979; Di Salvo, 1977
Organization	Lesikar, 1982; Cornwell and Manship, 1978; Wolf and Aurner, 1974; Hay, 1965; Di Salvo, 1977
Mannerisms (avoidance of)	Lesikar, 1982; Wolf and Aurner, 1974; DeMare, 1979; Hay, 1965; Di Salvo, 1977
Enthusiasm, tempo	Hay, 1965; Lesikar, 1982; DeMare, 1979; Cornwell and Manship, 1978
Planning	Hay, 1965; Di Salvo, 1977
Unity	DeMare, 1979; Wolf and Aurner, 1974
Grammar	Wolf and Aurner, 1974; Lesikar, 1982
Loudness	DeMare, 1979
Simplicity	Wolf and Aurner, 1974

Oral Presentations

Findings relate to the objective	Aurner and Wolf, 1967; Di Salvo, 1977; Wolf and Aurner, 1974; Cornwell and Manship, 1978; Lesikar, 1982
Adaptation to the audience	Aurner and Wolf, 1967; Di Salvo, 1977; Hay, 1965; Cornwell and Manship, 1978; Lesikar, 1982
Use of visual aides	Gordon and Miller, 1983; Aurner and Wolf, 1967; Hay, 1965; Cornwell and Manship, 1978; Lesikar, 1982
Voice quality	Hay, 1965; Cornwell and Manship, 1978; Lesikar, 1982
Comprehension of assignment	Di Salvo, 1977; Cornwell and Manship, 1978
Naturalness	Hay, 1965; Lesikar, 1982
Enthusiasm	Hay, 1965; Cornwell and Manship, 1978
Logical explanations	Di Salvo, 1977
Planning	Hay, 1965
Organization	Hay, 1965
Persuasive	Aurner and Wolf, 1967

Conference

Clear agenda	Aurner and Wolf, 1967; DeMare, 1979; Di Salvo, 1977; Gordon, M., 1981; Smeltzer and Waltman, 1984; Wolf and Aurner, 1974
Participation encouraged	DeMare, 1979; Di Salvo, 1977; Gordon, M., 1981; Smeltzer and Waltman, 1984; Lesikar, 1982; Wolf and Aurner, 1974
Maintenance of order	Aurner and Wolf, 1967; Di Salvo, 1977; Smeltzer and Waltman, 1984; Lesikar, 1982
Reconciliation of opinions	Aurner and Wolf, 1967; DeMare, 1979; Smeltzer and Waltman, 1984
Schedule, flow	DeMare, 1979; Smeltzer and Waltman, 1984; Lesikar, 1982
Prior planning	Gordon, M., 1981; Smeltzer and Waltman, 1984; Lesikar, 1982
Pertinent topics discussed	DeMare, 1979; Di Salvo, 1977
Leader goes with group decision	Di Salvo, 1977; Gordon, M., 1981
Summarization of key points Written followup	DeMare, 1979; Lesikar, 1982
Format appropriate	Smeltzer and Waltman, 1984
Leadership	Wolf and Aurner, 1974

Interview

Clear objective	Smeltzer and Waltman, 1984; Gordon and Miller, 1983; Lesikar, 1982
Preparation of questions	Smeltzer and Waltman, 1984; Gordon and Miller, 1983; Lesikar, 1982
Optimum time and place	Smeltzer and Waltman, 1984; Gordon and Miller, 1983
Open climate	Smeltzer and Waltman, 1984; Lesikar, 1982
Questions phrased non-threatening	Smeltzer and Waltman, 1984; Gordon and Miller, 1983
Recording of the interview	Smeltzer and Waltman, 1984; Lesikar, 1982
Closing summary	Smeltzer and Waltman, 1984; Gordon and Miller, 1983
Order of questioning	Smeltzer and Waltman, 1984
Consideration of the interviewee	Gordon and Miller, 1983
Control of the interview	Lesikar, 1982
Listening	Lesikar, 1982

Conversation

Comments pertinent	Aurner and Wolf, 1967
Timing of remarks	Aurner and Wolf, 1967
Appropriate non-verbal responses	Aurner and Wolf, 1967
(Other attributes included from the general verbal category)	

Telephonic

Identification of the caller	Aurner and Wolf, 1967; Smeltzer and Waltman, 1984
Tone of voice	Aurner and Wolf, 1967; Smeltzer and Waltman, 1984
Information discussed is available	Aurner and Wolf, 1967; Smeltzer and Waltman, 1984
Clarity of diction	Aurner and Wolf, 1967
Use of a "you" attitude	Smeltzer and Waltman, 1984
Courtesy (Avoidance of the "hold" button) (Avoidance of having someone else place the call)	Smeltzer and Waltman, 1984
Effective opening statement	Smeltzer and Waltman, 1984

Appendix D: Interview Introduction Guide

This is (LCDR) Bob Browder at the Air Force Institute of Technology. I'm conducting research on communications between Department of the Navy program managers and the end user of the system being acquired. Communications with the user has been identified by the President's Blue Ribbon Commission on Defense Acquisition as an important factor in program success which translates into savings in tax dollars. The thrust of my research is the development of a communications audit that can be used by the program manager (you) to evaluate the effectiveness of their (your) communications with the user. I envision the audit as a tool which will provide not only insight into the general effectiveness of communications but will allow the program manager (you) to direct effort in improving those characteristics which will result in the biggest improvement in effectiveness.

An important aspect of my research is the ranking of attributes of communication. I have identified a number of attributes of communication used in business through a literature review of business communication texts. I have not come across a ranking of these attributes during my literature review.

To get a ranking of these attributes I am seeking help from fifteen experts in technical communication. It would help me greatly if you would assist me by ranking these attributes. The attributes have been sorted according to the method of communication, written (letter, memorandum, report) and verbal (telephone, conversing, interviewing, conferencing, presentation). Ranking will be done by assigning a proportion of 100 possible points to each attribute listed for a method. I will be more than willing to share the results of my research upon completion in late August of this year.

Would you prefer that I send a ranking sheet to your business address? What is your address?

Date: _____

Thank you for your time.

Appendix E: Program Manager Interview Guide

Respondent: _____

Date: _____

1. How would you define "effective" communications?

2. What Department of Defense, Department of the Navy or Naval Air Systems Command directives provide guidance on communications with the user?

3. What methods of communication do you typically use when communicating with the user?

4. How often do you communicate with the user?

5. In what phase of the program do you most often communicate with the user?

6. Of what benefit would a tool to assist you in evaluating communications with the user be?

7. During what phase of the program would an evaluation of communications with the user be most effective?

8. What form should an evaluation tool take, written or oral?

9. How much of your time would you be willing to spend to determine the effectiveness of your communications with the user?

Appendix F: Memorandum on First Cut of Ranking Form

27 APR 87

From: Dr. Robert Weaver
To: LCDR Robert Browder

"An interesting - and potentially valuable - project. Your audit is cleverly designed for easy use by the respondents and by you in tabulating your data. Because the content of your lists reflects the consensus of many communication texts, I haven't presumed to change any of them to conform with my biases. If you wanted my lists, you would have asked me earlier in your project.

Instead, I've tried to evaluate and comment on the validity of your measurements. If two items in a list measure the same attribute, that attribute has an advantage in your scoring system. And if an item is unclear, it is likely at a disadvantage.

With only a few minor adjustments the overall validity of your instrument should be satisfactory for your purpose. It will be interesting to see what 'other' attributes your respondents add. What decision rule will you use for including 'others' in your final tabulation?

If you want to discuss this further, please drop by. Good luck!"

Bob Weaver

Note: This facsimile refers to Appendix G.

Appendix G: First Cut of Ranking Form

Written Communication

=====

Method of Communication: Writing in General

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Clarity, clearness of thought	_____	_____
Positive tone	_____	_____
Adaptation to the reader's level	_____	_____
Personalized style	_____	_____
Coherence, effective transition	_____	_____
Readability, simple words	_____	_____
_____	_____	_____
	100	

=====

Method of Communication: Written Reports (Progress, technical reports, proposals, recommendations)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Subject is of major significance	_____	_____
Extraneous material is excluded	_____	_____
Vital points are emphasized	_____	_____
Prejudice and emotion are avoided	_____	_____
Writing is impersonal	_____	_____
Report significance is established	_____	_____
Topics are clearly identified	_____	_____
_____	_____	_____
	100	

=====

=====
Method of Communication: Correspondence (Business letters, written communications to individuals or organizations not within your office)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Positive tone	_____	_____
Interesting message	_____	_____
Personalized	_____	_____
Early statement of the objective	_____	_____
Cordial closing	_____	_____
Appearance is professional	_____	_____
Believability	_____	_____
_____	_____	_____
	100	

=====
Method of Communication: Memorandum (Written communications within your organization)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Early statement of the objective	_____	_____
Format follows conventions	_____	_____
Alternatives presented	_____	_____
Positive tone	_____	_____
Subject is of immediate interest	_____	_____
Accuracy	_____	_____
Sequencing is logical	_____	_____
_____	_____	_____
	100	

=====
Method of Communication: Bulletin (Information bulletins,
written communications to a group)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Information is factual	_____	_____
Subsequent issues vary	_____	_____
Technical jargon is avoided	_____	_____
Delivery is directly to receiver	_____	_____
Over use is avoided	_____	_____
Subject is responsive to receiver	_____	_____
Information is pertinent	_____	_____
_____	_____	_____
	100	

Verbal Communication

=====

Method of Communication: Verbal Communication in General

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Inflection, voice quality	_____	_____
Organization of material	_____	_____
Clear, substantive objective	_____	_____
Distracting mannerisms avoided	_____	_____
Adaptation to the listener	_____	_____
Enthusiasm	_____	_____
Grammar	_____	_____
_____	_____	_____
	100	

=====

Method of Communication: Oral Presentation (Briefing, oral report)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Adaptation to the audience	_____	_____
Content is related to objectives	_____	_____
Effective use of visual aids	_____	_____
Voice quality	_____	_____
Comprehension of report material	_____	_____
Naturalness in presentation	_____	_____
Enthusiasm	_____	_____
_____	_____	_____
	100	

=====

=====

Method of Communication: Conference (Structured meeting,
formal working group, committee)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Clear agenda	_____	_____
Participation encouraged	_____	_____
Maintenance of order	_____	_____
Reconciliation of opinions	_____	_____
Schedule is maintained	_____	_____
Prior planning	_____	_____
Summarization of key points	_____	_____
_____	_____	_____
	100	

=====

Method of Communication: Interview (For the purpose of
gathering information)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Interviewee knows objective	_____	_____
Interview is summarized at the end	_____	_____
Prior preparation of questions	_____	_____
Open climate	_____	_____
Questions are non-threatening	_____	_____
Record of interview maintained	_____	_____
Optimum time and place	_____	_____
_____	_____	_____
	100	

=====

Method of Communication: Conversation (Casual business discussions)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Comments are pertinent	_____	_____
Proper timing of comments	_____	_____
Appropriate non-verbal responses	_____	_____
Adaptation to the listener	_____	_____
Naturalness	_____	_____
Voice quality	_____	_____
Grammar	_____	_____
_____	_____	_____
	100	

=====

Method of Communication: Telephonic

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Caller's identity is made known	_____	_____
Tone of voice	_____	_____
Pertinent information at hand	_____	_____
Clarity of diction	_____	_____
Personalization	_____	_____
Effective opening statement	_____	_____
Courtesy	_____	_____
_____	_____	_____
	100	



DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE OH 45433-6583

Appendix H: Cover Letter to Communication Professionals

REPLY TO
ATTN OF

LSG/GLM-87S (Robert M. Browder, 513-236-8821, AV 785-4437)

SUBJECT

Request for Research Help

TO

1. The President's Blue Ribbon Commission on Defense Management (the Packard Commission) identified several factors which contribute to the successful management of acquisition programs in civilian industry. The Commission recommended adoption of these factors by the Department of Defense.

2. One of the factors noted by the Commission was the importance of establishing effective communications between the program manager and the end user of the system being acquired. However, the program manager does not presently have a tool to measure the effectiveness of his or her communications.

3. This research effort is directed at developing an audit that can be used by a program manager to evaluate the effectiveness of communications with the user. The audit will allow the program manager to concentrate his or her efforts on improving those attributes of communication which contribute most to communication effectiveness.

4. The methods of communication and their attributes in this research effort were extracted from business communications publications and, while not totally inclusive, represent most of the methods of communication used by a program manager. As a communications expert, you are especially qualified to provide insight about the importance of attributes which contribute to the effectiveness of these methods of communication.

5. I am requesting that you apportion 100 points among the attributes for each method of communication listed on the attached ranking form. Please base your point assignment upon your opinion of each attribute's importance from the receiver's (user's) point of view. You may include another attribute if you feel that it is more important than one listed. The cumulative points column can be used as a scratch pad to track the points as they are assigned. All 100 points should be assigned for each method. Please return this cover letter and the attached ranking form in the envelope supplied.

6. Your help in this research effort is important and sincerely appreciated. Thank you.

R.M. Browder
LCDR USN

2 Atchs
1. Attribute Ranking Form
2. Return Envelope

STRENGTH THROUGH KNOWLEDGE

H-1



DEPARTMENT OF THE AIR FORCE
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WRIGHT-PATTERSON AIR FORCE BASE OH 45433-6583

Appendix I: Cover Letter to Program Managers

REPLY TO
ATTN OF LSG/GLM-a7S (Robert M. Browder, 513-236-8821, AV 785-4437)

SUBJECT Request for Research Help

TO

1. The President's Blue Ribbon Commission on Defense Management (the Packard Commission) identified several factors which contribute to the successful management of civilian industry acquisition programs. The Commission recommended the Department of Defense adopt these factors.

2. One of the factors noted by the Commission was the importance of establishing effective communications between the program manager and the end user of the system being acquired. However, the program manager does not presently have a tool to measure the effectiveness of his or her communications. This research effort is directed at developing an audit that can be used by a program manager to evaluate the effectiveness of communications with the user. The audit will allow the program manager to concentrate his or her efforts on improving those attributes of communication which contribute most to communication effectiveness.

3. The methods of communication and their positive attributes in this research effort were extracted from business communications publications and represent most of the methods of communication used by program managers. As a program manager, your insight into the importance of attributes which contribute to the effectiveness of these methods of communication is requested.

4. Using the attached ranking form, please apportion 100 points among the attributes for each method of communication listed. The point assignment should be based upon your opinion of each attribute's importance from the receiver's (user's) point of view. You may replace one attribute with one of your choosing if you feel it is significantly more important than one listed. The cumulative points column can be used as a scratch pad to track the points as they are assigned. All 100 points should be assigned for each method. Please return this cover letter and the attached ranking form in the envelope supplied.

5. Your help in this research effort is important and sincerely appreciated. Thank you.

R.M. Browder
LCCR USN

2 Atchs
1. Attribute Ranking Form
2. Return Envelope

STRENGTH THROUGH KNOWLEDGE

Appendix J: Smooth Ranking Form

Communication Attributes Ranking

Written Communication

=====
Method of Communication: Writing in General

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Clarity, clearness of thought	_____	_____
Positive tone	_____	_____
Adaptation to the reader's level	_____	_____
Style is succinct, conversational	_____	_____
Coherence, effective transition	_____	_____
Readability, simplicity	_____	_____
_____	_____	_____
	100	

=====
Method of Communication: Written Reports (Progress,
technical reports, proposals, recommendations)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Subject is of major significance	_____	_____
Extraneous material is excluded	_____	_____
Vital points are emphasized	_____	_____
Prejudice and emotion are avoided	_____	_____
Writing is impersonal	_____	_____
Present tense is used	_____	_____
Topics are clearly identified	_____	_____
_____	_____	_____
	100	

=====
Method of Communication: Correspondence (Business letters, written communications to individuals or organizations not within your office)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Positive tone	_____	_____
Interesting message	_____	_____
Personalized	_____	_____
Early statement of the objective	_____	_____
Cordial closing	_____	_____
Professional appearance	_____	_____
Believability	_____	_____
_____	100	_____

=====
Method of Communication: Memorandum (Written communications within your organization)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Early statement of the objective	_____	_____
Format follows conventions	_____	_____
Alternatives presented	_____	_____
Positive tone	_____	_____
Subject of immediate interest	_____	_____
Accuracy	_____	_____
Logical sequence	_____	_____
_____	100	_____

Verbal Communication

Method of Communication: Verbal Communication in General

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Inflection, voice quality	_____	_____
Organization of material	_____	_____
Clear, substantive objective	_____	_____
No distracting mannerisms	_____	_____
Adaptation to the listener	_____	_____
Enthusiasm	_____	_____
Acceptable grammar	_____	_____
_____	100	_____

Method of Communication: Oral Presentation (Briefing, oral report)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Adaptation to the audience	_____	_____
Content related to objectives	_____	_____
Effective use of visual aids	_____	_____
Voice quality	_____	_____
Comprehension of report material	_____	_____
Naturalness in presentation	_____	_____
Enthusiasm	_____	_____
_____	100	_____

=====
Method of Communication: Conference (Structured meeting,
formal working group, committee)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Clear agenda	_____	_____
Participation encouraged	_____	_____
Maintenance of order	_____	_____
Reconciliation of opinions	_____	_____
Schedule maintained	_____	_____
Prior planning	_____	_____
Summarization of key points	_____	_____
_____	_____	_____
	100	

=====
Method of Communication: Interview (For the purpose of
gathering information)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Interviewee knows objective	_____	_____
Interview summarized at the end	_____	_____
Prior preparation of questions	_____	_____
Open climate	_____	_____
Questions are non-threatening	_____	_____
Record of interview maintained	_____	_____
Optimum time and place	_____	_____
_____	_____	_____
	100	

=====

Method of Communication: Conversation (Casual business discussions)

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Comments pertinent	_____	_____
Proper timing of comments	_____	_____
Appropriate non-verbal responses	_____	_____
Adaptation to the listener	_____	_____
Naturalness	_____	_____
Voice quality	_____	_____
Acceptable grammar	_____	_____
_____	_____	_____
	100	

=====

Method of Communication: Telephonic

<u>Attribute</u>	<u>Points</u>	<u>Cumulative Points</u>
Caller's identity made known	_____	_____
Tone of voice	_____	_____
Pertinent information at hand	_____	_____
Clarity of diction	_____	_____
Personalization	_____	_____
Effective opening statement	_____	_____
Courtesy	_____	_____
_____	_____	_____
	100	

Appendix K: Data From Communication Professionals

TABLE K-1
Weighting of Attributes for Writing in General by Communication Professionals

RANKERS	Clarity, Clearness of Thought	Positive Tone	Adaptation to Reader's Level	Style is Succinct, Conver- sational	Coherence, Effective Transition	Readability Simplicity	Other
1	20 (6.5)	15 (3.5)	15 (3.5)	15 (3.5)	20 (6.5)	15 (3.5)	0 (1.0)
2	20 (6.0)	10 (2.0)	20 (6.0)	15 (3.5)	20 (6.0)	15 (3.5)	0 (1.0)
3	60 (7.0)	2 (2.0)	10 (5.0)	3 (3.0)	5 (4.0)	20 (6.0)	0 (1.0)
4	30 (6.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	30 (6.5)	0 (1.0)
5	25 (6.0)	10 (3.5)	25 (6.0)	10 (3.5)	5 (2.0)	25 (6.0)	0 (1.0)
6	15 (4.5)	5 (2.0)	25 (6.0)	15 (4.5)	10 (3.0)	30 (7.0)	0 (1.0)
7	30 (7.0)	5 (2.0)	20 (5.5)	10 (3.0)	20 (5.5)	15 (4.0)	0 (1.0)
8	70 (7.0)	0 (2.0)	20 (6.0)	5 (4.5)	5 (4.5)	0 (2.0)	0 (2.0)
9	70 (7.0)	5 (3.5)	5 (3.5)	5 (3.5)	5 (3.5)	10 (6.0)	0 (1.0)
10	50 (7.0)	5 (2.0)	15 (6.0)	10 (4.0)	10 (4.0)	10 (4.0)	0 (1.0)
11	30 (7.0)	5 (2.0)	20 (5.5)	10 (3.0)	20 (5.5)	15 (4.0)	0 (1.0)
12	17 (5.5)	16 (2.5)	17 (5.5)	16 (2.5)	17 (5.5)	17 (5.5)	0 (1.0)
13	30 (6.0)	5 (2.5)	10 (4.5)	5 (2.5)	40 (7.0)	10 (4.5)	0 (1.0)
Range	55.00 19.71	16.00 4.74	20.00 6.17	13.00 4.42	35.00 10.00	30.00 8.45	0.00 0.00

TABLE K-2
Weighting of Attributes for Written Reports by Communication Professionals

RANKERS	Subject is of Extraneous		Vital Points		Prejudice		Writing is		Present		Topics are	
	Major Signi- ficance	Material is Excluded	are Empha- sized	are Avoided	and Emotion are Avoided	Impersonal	Personal	Used	Clearly Identified	Other		
1	15 (5.5)	15 (5.5)	15 (5.5)	10 (2.5)	10 (2.5)	10 (2.5)	15 (5.5)	20 (8.0)	0 (1.0)			
2	5 (3.0)	20 (6.0)	20 (6.0)	20 (6.0)	10 (4.0)	10 (4.0)	0 (1.5)	25 (8.0)	0 (1.5)			
3	70 (8.0)	5 (5.5)	5 (5.5)	1 (2.5)	1 (2.5)	3 (4.0)	15 (7.0)	0 (1.0)				
4	30 (7.0)	10 (5.0)	15 (6.0)	5 (4.0)	2 (2.0)	3 (3.0)	35 (8.0)	0 (1.0)				
5	15 (5.0)	15 (5.0)	25 (8.0)	15 (5.0)	5 (2.5)	5 (2.5)	20 (7.0)	0 (1.0)				
6	25 (8.0)	15 (5.0)	20 (7.0)	15 (5.0)	0 (1.5)	10 (3.0)	15 (5.0)	0 (1.5)				
7	22 (8.0)	14 (5.0)	10 (7.0)	12 (4.0)	10 (3.0)	9 (2.0)	15 (6.0)	0 (1.0)				
8	0 (2.5)	5 (5.5)	45 (7.5)	5 (5.5)	0 (2.5)	0 (2.5)	45 (7.5)	0 (2.5)				
9	20 (6.0)	20 (6.0)	30 (8.0)	5 (3.5)	5 (3.5)	0 (1.5)	20 (6.0)	0 (1.5)				
10	20 (6.5)	20 (6.5)	20 (6.5)	10 (4.0)	5 (2.5)	5 (2.5)	20 (6.5)	0 (1.0)				
11	30 (8.0)	20 (6.5)	20 (6.5)	10 (4.5)	5 (2.5)	5 (2.5)	10 (4.5)	0 (1.0)				
12	30 (8.0)	15 (6.0)	15 (6.0)	10 (3.5)	5 (2.0)	10 (3.5)	15 (6.0)	0 (1.0)				
13	10 (4.0)	15 (5.0)	20 (6.5)	20 (6.5)	5 (2.5)	5 (2.5)	25 (8.0)	0 (1.0)				

TABLE K-3

Weighting of Attributes for Correspondence by Communication Professionals

RANKERS	Positive Tone	Interesting Message	Personalized	Early State- ment of the Objective	Closing	Professional Appearance	Believ- ability	Other
1	15 (5.5)	20 (6.0)	15 (5.5)	15 (5.5)	10 (2.5)	10 (2.5)	15 (5.5)	0 (1.0)
2	10 (3.5)	10 (3.5)	15 (5.0)	20 (7.0)	5 (2.0)	20 (7.0)	0 (1.0)	20 (7.0)
3	5 (5.0)	10 (6.0)	1 (2.5)	60 (8.0)	1 (2.5)	3 (4.0)	20 (7.0)	0 (1.0)
4	6 (5.0)	5 (4.0)	25 (6.0)	30 (7.5)	0 (1.5)	30 (7.5)	4 (3.0)	0 (1.5)
5	15 (5.5)	0 (1.5)	5 (3.5)	30 (7.5)	5 (3.5)	30 (7.5)	15 (5.5)	0 (1.5)
6	10 (4.0)	5 (2.0)	10 (4.0)	25 (7.5)	10 (4.0)	25 (7.5)	15 (6.0)	0 (1.0)
7	15 (5.0)	21 (7.0)	5 (3.0)	25 (8.0)	2 (2.0)	20 (6.0)	12 (4.0)	0 (1.0)
8	10 (4.0)	0 (1.5)	20 (6.5)	30 (8.0)	0 (1.5)	10 (4.0)	10 (4.0)	20 (6.5)
9	10 (4.5)	0 (2.0)	30 (7.5)	10 (4.5)	0 (2.0)	20 (6.0)	30 (7.5)	0 (2.0)
10	10 (4.0)	15 (5.5)	5 (2.5)	20 (7.0)	5 (2.5)	15 (5.5)	30 (8.0)	0 (1.0)
11	5 (2.5)	15 (6.0)	10 (4.5)	25 (7.0)	5 (2.5)	10 (4.5)	30 (8.0)	0 (1.0)
12	10 (4.0)	10 (4.0)	10 (4.0)	30 (8.0)	10 (4.0)	20 (7.0)	10 (4.0)	0 (1.0)
13	10 (3.5)	10 (3.5)	15 (6.0)	20 (7.0)	10 (3.5)	25 (8.0)	10 (3.5)	0 (1.0)
Range	10.00 3.43	21.00 7.16	29.00 8.45	50.00 11.93	10.00 4.08	27.00 8.30	30.00 9.70	20.00 7.51

TABLE K-4

Weighting of Attributes for Memorandums by Communication Professionals

RANKERS	Early Statement of the Objective		Format Follows Conventions		Alternatives Presented		Positive Tone		Subject of Immediate Interest		Accuracy		Logical Sequence		Other	
1	15 (5.5)	10 (2.5)	10 (2.5)	10 (2.5)	10 (2.5)	10 (2.5)	15 (5.5)	15 (5.5)	15 (5.5)	20 (6.0)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	0 (1.0)	0 (1.0)
2	20 (7.0)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	20 (7.0)	20 (7.0)	20 (7.0)	20 (7.0)	20 (7.0)	0 (1.0)	0 (1.0)
3	30 (7.5)	1 (2.5)	1 (2.5)	15 (5.0)	15 (5.0)	1 (2.5)	1 (2.5)	1 (2.5)	3 (4.0)	30 (7.5)	30 (7.5)	30 (7.5)	20 (6.0)	20 (6.0)	0 (1.0)	0 (1.0)
4	25 (7.5)	2 (2.5)	2 (2.5)	6 (4.0)	6 (4.0)	2 (2.5)	2 (2.5)	2 (2.5)	25 (7.5)	20 (5.5)	20 (5.5)	20 (5.5)	20 (5.5)	20 (5.5)	0 (1.0)	0 (1.0)
5	30 (7.5)	10 (4.5)	10 (4.5)	10 (4.5)	10 (4.5)	10 (4.5)	10 (4.5)	10 (4.5)	0 (1.5)	30 (7.5)	30 (7.5)	30 (7.5)	10 (4.5)	10 (4.5)	0 (1.5)	0 (1.5)
6	20 (6.5)	10 (3.5)	10 (3.5)	0 (1.5)	10 (3.5)	10 (3.5)	10 (3.5)	25 (8.0)	25 (8.0)	20 (6.5)	20 (6.5)	15 (5.0)	15 (5.0)	15 (5.0)	0 (1.5)	0 (1.5)
7	20 (6.0)	10 (2.5)	10 (2.5)	15 (5.5)	15 (5.5)	10 (2.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	0 (1.0)	0 (1.0)
8	30 (7.0)	0 (2.5)	0 (2.5)	0 (2.5)	0 (2.5)	0 (2.5)	0 (2.5)	0 (2.5)	0 (2.5)	30 (7.0)	30 (7.0)	10 (5.0)	10 (5.0)	10 (5.0)	30 (7.0)	30 (7.0)
9	20 (6.5)	0 (1.5)	0 (1.5)	10 (4.0)	10 (4.0)	5 (3.0)	5 (3.0)	20 (6.5)	20 (6.5)	15 (5.0)	15 (5.0)	30 (8.0)	30 (8.0)	30 (8.0)	0 (1.5)	0 (1.5)
10	20 (6.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	15 (5.0)	15 (5.0)	25 (7.5)	25 (7.5)	25 (7.5)	25 (7.5)	25 (7.5)	0 (1.0)	0 (1.0)
11	20 (6.5)	5 (2.5)	5 (2.5)	10 (4.0)	10 (4.0)	5 (2.5)	5 (2.5)	20 (6.5)	20 (6.5)	20 (6.5)	20 (6.5)	20 (6.5)	20 (6.5)	20 (6.5)	0 (1.0)	0 (1.0)
12	20 (6.0)	10 (2.5)	10 (2.5)	15 (5.5)	15 (5.5)	10 (2.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	0 (1.0)	0 (1.0)
J	20 (7.0)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	15 (6.0)	15 (6.0)	25 (8.0)	25 (8.0)	25 (8.0)	0 (1.0)	0 (1.0)
Range	15.00	10.00	15.00	15.00	15.00	15.00	15.00	15.00	25.00	15.00	15.00	20.00	20.00	20.00	30.00	30.00
S.D.	4.04	4.33	5.01	4.67	4.67	4.67	4.67	4.67	8.45	5.83	5.83	5.91	5.91	5.91	8.32	8.32

TABLE K-5

Weighting of Attributes for Oral Communication in General by Communication Professionals

RANKERS	Inflection, Voice Quality	Organization of Material	Clear, Sub- tentative Objective	No distract- ing Manner- isms	Adaptation to the Listener	Enthusiasm	Acceptable Grammar	Other
1	10 (2.5)	15 (5.5)	15 (5.5)	15 (5.5)	10 (2.5)	15 (5.5)	20 (8.0)	0 (1.0)
2	10 (3.0)	10 (7.0)	10 (7.0)	10 (7.0)	15 (4.5)	6 (2.0)	15 (4.5)	0 (1.0)
3	5 (2.5)	25 (7.5)	25 (7.5)	10 (4.5)	5 (2.5)	20 (6.0)	10 (4.5)	0 (1.0)
4	14 (3.5)	15 (6.5)	15 (6.5)	12 (2.0)	15 (6.5)	15 (6.5)	14 (3.5)	0 (1.0)
5	5 (2.0)	10 (4.5)	30 (8.0)	10 (4.5)	25 (7.0)	10 (4.5)	10 (4.5)	0 (1.0)
6	10 (2.5)	15 (5.5)	10 (2.5)	15 (5.5)	20 (8.0)	15 (5.5)	15 (5.5)	0 (1.0)
7	10 (2.0)	15 (6.0)	20 (8.0)	12 (3.0)	13 (4.0)	15 (6.0)	15 (6.0)	0 (1.0)
8	5 (4.0)	30 (8.0)	20 (6.0)	2 (2.0)	20 (6.0)	20 (6.0)	3 (3.0)	0 (1.0)
9	10 (4.0)	10 (4.0)	20 (7.0)	10 (4.0)	10 (4.0)	30 (8.0)	10 (4.0)	0 (1.0)
10	5 (2.5)	20 (6.5)	20 (6.5)	10 (4.0)	20 (6.5)	0 (1.0)	5 (2.5)	20 (6.5)
11	15 (5.5)	15 (5.5)	20 (8.0)	10 (2.5)	15 (5.5)	15 (5.5)	10 (2.5)	0 (1.0)
12	5 (2.0)	15 (5.0)	20 (7.5)	10 (3.0)	15 (5.0)	15 (5.0)	20 (7.5)	0 (1.0)
13	15 (6.0)	30 (8.0)	25 (7.0)	10 (4.5)	10 (4.5)	5 (2.5)	5 (2.5)	0 (1.0)

Range	10.00	20.00	20.00	16.00	20.00	30.00	17.00	20.00
S.D.	3.09	6.60	5.03	3.77	5.43	7.59	5.42	5.55

TABLE K-6

Weighting of Attributes for Oral Presentations by Communication Professionals

RANKERS	Adaptation to the Audience	Content Related to the Objective	Effective Use of Visual Aides	Voice Quality	Comprehension of Report Material	Naturalness of Presentation	Enthusiasm	Other
1	10 (3.0)	20 (7.5)	10 (3.0)	10 (3.0)	20 (7.5)	15 (5.5)	15 (5.5)	0 (1.0)
2	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	0 (1.0)	10 (2.0)	15 (5.5)
3	10 (3.0)	20 (7.5)	15 (5.5)	10 (3.0)	20 (7.5)	15 (5.5)	10 (3.0)	0 (1.0)
4	15 (5.5)	15 (5.5)	10 (2.0)	14 (3.0)	16 (8.0)	15 (5.5)	15 (5.5)	0 (1.0)
5	20 (7.0)	20 (7.0)	5 (2.0)	10 (3.5)	20 (7.0)	10 (3.5)	15 (5.0)	0 (1.0)
6	20 (7.5)	20 (7.5)	15 (5.5)	10 (3.0)	15 (5.5)	10 (3.0)	10 (3.0)	0 (1.0)
7	10 (7.0)	20 (8.0)	7 (2.0)	15 (4.5)	15 (4.5)	8 (3.0)	17 (6.0)	0 (1.0)
8	40 (8.0)	20 (6.5)	5 (3.5)	5 (3.5)	0 (1.5)	10 (5.0)	20 (6.5)	0 (1.5)
9	5 (3.5)	5 (3.5)	20 (6.0)	30 (7.5)	5 (3.5)	5 (3.5)	30 (7.5)	0 (1.0)
10	20 (7.5)	15 (5.0)	15 (5.0)	10 (3.0)	20 (7.5)	15 (5.0)	5 (2.0)	0 (1.0)
11	15 (5.5)	15 (5.5)	10 (2.5)	15 (5.5)	20 (8.0)	10 (2.5)	15 (5.5)	0 (1.0)
12	15 (5.5)	20 (8.0)	10 (2.5)	10 (2.5)	15 (5.5)	15 (5.5)	15 (5.5)	0 (1.0)
13	20 (6.5)	25 (8.0)	15 (5.0)	5 (2.5)	20 (6.5)	10 (4.0)	5 (2.5)	0 (1.0)
Range	35.00 8.20	20.00 4.04	15.00 4.53	25.00 6.30	20.00 6.20	15.00 4.55	25.00 6.56	15.00 4.16

N
10

TABLE K-7

Weighting of Attributes for Conferences by Communication Professionals

RANKERS	Clear Agenda	Participation Encouraged	Maintenance of Order	Reconciliation of Opinions	Schedule		Prior Planning	Summarization of Key Points		Other
					Maintained	Unmaintained		Points	Points	
1	20 (7.5)	10 (3.0)	15 (5.5)	10 (3.0)	15 (5.5)	15 (3.0)	20 (7.5)	10 (3.0)	0 (1.0)	0 (1.0)
2	20 (7.0)	15 (4.5)	20 (7.0)	10 (3.0)	15 (4.5)	15 (3.0)	0 (1.5)	20 (7.0)	0 (1.5)	0 (1.5)
3	15 (5.0)	20 (6.5)	20 (6.5)	9 (3.0)	1 (2.0)	1 (3.0)	25 (8.0)	10 (4.0)	0 (1.0)	0 (1.0)
4	14 (4.5)	14 (4.5)	15 (6.0)	13 (3.0)	12 (2.0)	12 (3.0)	16 (7.5)	16 (7.5)	0 (1.0)	0 (1.0)
5	30 (8.0)	5 (3.5)	5 (3.5)	0 (1.5)	25 (6.5)	25 (3.0)	25 (6.5)	10 (5.0)	0 (1.5)	0 (1.5)
6	15 (5.5)	15 (5.5)	20 (8.0)	10 (2.5)	15 (5.5)	15 (3.0)	10 (2.5)	15 (5.5)	0 (1.0)	0 (1.0)
7	20 (7.0)	9 (3.0)	12 (4.0)	0 (1.5)	10 (6.0)	10 (3.0)	25 (8.0)	16 (5.0)	0 (1.5)	0 (1.5)
8	20 (6.5)	30 (8.0)	10 (4.5)	10 (4.5)	5 (2.5)	5 (3.0)	20 (6.5)	5 (2.5)	0 (1.0)	0 (1.0)
9	10 (5.0)	10 (5.0)	40 (8.0)	30 (7.0)	10 (5.0)	10 (3.0)	0 (2.0)	0 (2.0)	0 (2.0)	0 (2.0)
10	20 (6.5)	20 (6.5)	5 (2.5)	15 (5.0)	5 (2.5)	5 (3.0)	25 (8.0)	10 (4.0)	0 (1.0)	0 (1.0)
11	15 (5.5)	10 (3.0)	10 (3.0)	20 (7.5)	15 (5.5)	15 (3.0)	20 (7.5)	10 (3.0)	0 (1.0)	0 (1.0)
12	20 (7.5)	15 (5.5)	10 (3.0)	10 (3.0)	10 (3.0)	10 (3.0)	20 (7.5)	15 (5.5)	0 (1.0)	0 (1.0)
13	30 (8.0)	15 (6.0)	5 (2.5)	10 (4.5)	5 (2.5)	5 (3.0)	25 (7.0)	10 (4.5)	0 (1.0)	0 (1.0)
Range	20.00	25.00	35.00	30.00	24.00	25.00	25.00	20.00	0.00	0.00
S.D.	5.79	6.35	9.48	7.71	6.55	9.02	9.02	5.20	0.00	0.00

TABLE K-8

Weighting of Attributes for Interviews by Communication Professionals

RAHRS	Interviewee Knows the Objective	Interview Summarized at the End	Prior Pre- paration of Questions	Open Climate	Questions are Non- threatening	Record of Interview Maintained	Optimum Time and Place	Other
1	20 (7.5)	10 (3.0)	20 (7.5)	10 (3.0)	15 (5.5)	15 (5.5)	10 (3.0)	0 (1.0)
2	10 (3.0)	5 (2.0)	20 (7.5)	15 (5.0)	15 (5.0)	20 (7.5)	15 (5.0)	0 (1.0)
3	20 (7.0)	5 (2.0)	20 (7.0)	20 (7.0)	15 (5.0)	10 (3.5)	10 (3.5)	0 (1.0)
4	14 (5.0)	13 (2.0)	17 (8.0)	14 (5.0)	14 (5.0)	14 (5.0)	14 (5.0)	0 (1.0)
5	15 (5.5)	0 (1.5)	5 (3.5)	30 (7.5)	15 (5.5)	5 (3.5)	30 (7.5)	0 (1.5)
6	15 (5.5)	10 (2.5)	10 (2.5)	15 (5.5)	20 (8.0)	15 (5.5)	15 (5.5)	0 (1.0)
7	5 (2.5)	5 (2.5)	25 (8.0)	15 (5.0)	10 (4.0)	20 (6.5)	20 (6.5)	0 (1.0)
8	10 (6.0)	1 (2.0)	1 (2.0)	40 (7.5)	5 (5.0)	1 (2.0)	2 (4.0)	40 (7.5)
9	10 (5.5)	0 (2.5)	0 (2.5)	0 (2.5)	50 (8.0)	30 (7.0)	10 (5.5)	0 (2.5)
10	20 (6.5)	5 (2.5)	25 (8.0)	20 (6.5)	15 (5.0)	5 (2.5)	10 (4.0)	0 (1.0)
11	15 (5.5)	10 (3.0)	20 (7.5)	20 (7.5)	15 (5.5)	10 (3.0)	10 (3.0)	0 (1.0)
12	15 (7.5)	14 (4.0)	15 (7.5)	14 (4.0)	14 (4.0)	14 (4.0)	14 (4.0)	0 (1.0)
13	25 (7.5)	15 (5.5)	25 (7.5)	5 (2.5)	15 (5.5)	10 (4.0)	5 (2.5)	0 (1.0)
Range	20.00 5.41	15.00 5.21	25.00 8.87	40.00 10.15	45.00 10.55	29.00 7.62	28.00 6.93	40.00 11.09

TABLE K-9

Weighting of Attributes for Conversations by Communication Professionals

RANKERS	Comments Pertinent	Proper Timing of Comments	Appropriate Non-verbal Responses	Adaptation to the Listener	Naturalness	Voice Quality	Acceptable Grammar	Other
1	15 (6.0)	10 (3.0)	10 (3.0)	15 (6.0)	15 (6.0)	10 (3.0)	25 (8.0)	0 (1.0)
2	10 (3.5)	10 (3.5)	10 (3.5)	20 (7.0)	20 (7.0)	0 (1.0)	10 (3.5)	20 (7.0)
3	40 (8.0)	15 (6.0)	10 (5.0)	20 (7.0)	5 (3.0)	5 (3.0)	5 (3.0)	0 (1.0)
4	16 (7.5)	14 (4.5)	14 (4.5)	15 (6.0)	16 (7.5)	12 (2.0)	13 (3.0)	0 (1.0)
5	5 (3.0)	15 (5.5)	15 (5.5)	30 (8.0)	25 (7.0)	5 (3.0)	5 (3.0)	0 (1.0)
6	20 (8.0)	15 (5.5)	10 (2.5)	15 (5.5)	15 (5.5)	10 (2.5)	15 (5.5)	0 (1.0)
7	25 (8.0)	15 (5.5)	12 (4.0)	15 (5.5)	4 (2.0)	9 (3.0)	20 (7.0)	0 (1.0)
8	10 (5.0)	0 (2.5)	0 (2.5)	30 (7.0)	30 (7.0)	0 (2.5)	0 (2.5)	30 (7.0)
9	10 (6.0)	0 (3.0)	40 (7.0)	50 (8.0)	0 (3.0)	0 (3.0)	0 (3.0)	0 (3.0)
10	15 (5.5)	15 (5.5)	15 (5.5)	20 (8.0)	15 (5.5)	10 (2.5)	10 (2.5)	0 (1.0)
11	20 (7.0)	20 (7.0)	15 (5.0)	20 (7.0)	10 (3.5)	10 (3.5)	5 (2.0)	0 (1.0)
12	30 (8.0)	15 (6.5)	10 (3.5)	15 (6.5)	10 (3.5)	10 (3.5)	10 (3.5)	0 (1.0)
13	20 (7.0)	10 (3.5)	10 (3.5)	25 (8.0)	10 (3.5)	15 (6.0)	10 (3.5)	0 (1.0)
Range	35.00	20.00	40.00	35.00	30.00	15.00	25.00	30.00
S.D.	9.45	5.93	8.97	9.92	8.38	4.93	7.27	9.61

TABLE K-10

Weighting of Attributes for Telephonic Communications by Communication Professionals

RANKERS	Caller's Identity Made Known		Tone of Voice		Pertinent Information Let Heard		Clarity of Diction		Personalization		Effective Opening Statement		Courtesy		Other	
1	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	10 (2.0)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	0 (1.0)	0 (1.0)
2	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	10 (2.0)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	0 (1.0)	0 (1.0)
3	20 (6.5)	5 (2.5)	30 (8.0)	20 (6.5)	30 (8.0)	20 (6.5)	20 (6.5)	20 (6.5)	10 (4.5)	10 (4.5)	10 (4.5)	10 (4.5)	5 (2.5)	5 (2.5)	0 (1.0)	0 (1.0)
4	14 (4.0)	13 (2.5)	13 (2.5)	15 (6.5)	13 (2.5)	15 (6.5)	15 (6.5)	15 (6.5)	15 (6.5)	15 (6.5)	15 (6.5)	15 (6.5)	15 (6.5)	15 (6.5)	0 (1.0)	0 (1.0)
5	25 (7.0)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	15 (5.5)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	30 (8.0)	30 (8.0)	0 (1.0)	0 (1.0)
6	25 (8.0)	10 (3.5)	15 (6.0)	20 (7.0)	15 (6.0)	20 (7.0)	20 (7.0)	20 (7.0)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	10 (3.5)	0 (1.0)	0 (1.0)
7	20 (8.0)	15 (5.0)	15 (5.0)	15 (5.0)	15 (5.0)	15 (5.0)	15 (5.0)	15 (5.0)	5 (2.0)	5 (2.0)	15 (5.0)	15 (5.0)	15 (5.0)	15 (5.0)	0 (1.0)	0 (1.0)
8	20 (6.5)	20 (6.5)	40 (8.0)	0 (2.0)	40 (8.0)	0 (2.0)	0 (2.0)	0 (2.0)	10 (4.5)	10 (4.5)	10 (4.5)	10 (4.5)	0 (2.0)	0 (2.0)	0 (1.0)	0 (1.0)
9	10 (6.0)	0 (2.0)	5 (4.5)	0 (2.0)	5 (4.5)	0 (2.0)	0 (2.0)	0 (2.0)	50 (8.0)	50 (8.0)	30 (7.0)	30 (7.0)	5 (4.5)	5 (4.5)	0 (1.0)	0 (1.0)
10	20 (7.5)	10 (3.0)	15 (5.5)	10 (3.0)	15 (5.5)	10 (3.0)	10 (3.0)	10 (3.0)	15 (5.5)	15 (5.5)	10 (3.0)	10 (3.0)	20 (7.5)	20 (7.5)	0 (1.0)	0 (1.0)
11	10 (3.0)	15 (5.5)	20 (7.5)	10 (3.0)	20 (7.5)	10 (3.0)	10 (3.0)	10 (3.0)	15 (5.5)	15 (5.5)	10 (3.0)	10 (3.0)	20 (7.5)	20 (7.5)	0 (1.0)	0 (1.0)
12	14 (4.0)	14 (4.0)	15 (7.5)	14 (4.0)	15 (7.5)	14 (4.0)	14 (4.0)	14 (4.0)	14 (4.0)	14 (4.0)	14 (4.0)	14 (4.0)	15 (7.5)	15 (7.5)	0 (1.0)	0 (1.0)
13	20 (7.0)	5 (2.0)	30 (8.0)	10 (4.0)	30 (8.0)	10 (4.0)	10 (4.0)	10 (4.0)	15 (6.0)	15 (6.0)	10 (4.0)	10 (4.0)	10 (4.0)	10 (4.0)	0 (1.0)	0 (1.0)
Range S.D.	15.00 4.94	20.00 5.50	35.00 9.25	20.00 6.54	20.00 6.54	45.00 11.33	25.00 5.94	30.00 7.74	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00

TABLE L-1
Weighting of Attributes for Writing in General by Program Managers

	Clarity, Thought	Positive Tone	Adaptation to Reader's Level	Style is Succinct, Conver- sational	Coherence, Effective Transition	Readability, Simplicity	Other
RANKS							
1	35 (7.0)	10 (4.0)	25 (6.0)	5 (2.5)	5 (2.5)	20 (5.0)	0 (1.0)
2	35 (7.0)	10 (4.0)	0 (3.0)	2 (2.0)	15 (5.0)	30 (6.0)	0 (1.0)
3	20 (5.5)	10 (2.5)	25 (7.0)	10 (2.5)	15 (4.0)	20 (5.5)	0 (1.0)
4	30 (7.0)	10 (2.5)	20 (6.0)	10 (2.5)	15 (4.5)	15 (4.5)	0 (1.0)
Range	15.00	0.00	17.00	0.00	10.00	15.00	0.00
S.D.	7.07	0.00	6.02	3.95	5.00	6.29	0.00

TABLE L-2

Weighting of Attributes for Written Reports by Program Managers

RANKERS	Subject Is of		Vital Points		Prejudice		Writing Is		Present		Topics are	
	Major Signi- ficance	Material Is Excluded	Are Empha- sized	Are Avoided	and Emotion Are Avoided	Impersonal	Used	Clearly Identified	Other			
1	15 (5.0)	25 (7.5)	25 (7.5)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	20 (6.0)	0 (1.0)			
2	5 (4.5)	5 (4.5)	40 (8.0)	8 (6.0)	2 (2.5)	2 (2.5)	2 (2.5)	30 (7.0)	0 (1.0)			
3	0 (1.5)	20 (6.5)	30 (8.0)	20 (6.5)	10 (4.0)	5 (3.0)	5 (3.0)	15 (5.0)	0 (1.5)			
4	20 (6.5)	20 (6.5)	20 (6.5)	10 (4.0)	5 (2.5)	5 (2.5)	5 (2.5)	20 (6.5)	0 (1.0)			
Range	20.00	20.00	20.00	15.00	8.00	3.00	15.00	0.00	0.00			
S.D.	9.13	8.66	12.20	6.5	3.32	1.50	6.29	0.00	0.00			

TABLE L-3
Weighting of Attributes for Correspondence by Program Managers

RANKERS	Positive Tone	Interesting Message	Personalized	Early State- ment of the Objective	Cordial Closing	Professional Appearance	Believ- ability	Other
1	10 (4.0)	10 (4.0)	10 (4.0)	30 (8.0)	10 (4.0)	10 (4.0)	20 (7.0)	0 (1.0)
2	10 (5.0)	5 (3.0)	5 (3.0)	45 (8.0)	5 (3.0)	15 (6.5)	15 (6.5)	0 (1.0)
3	10 (4.0)	20 (6.5)	5 (2.5)	20 (6.5)	5 (2.5)	20 (6.5)	20 (6.5)	0 (1.0)
4	0 (3.0)	10 (4.5)	6 (1.5)	15 (6.5)	6 (1.5)	15 (6.5)	10 (4.5)	30 (8.0)
Range	2.00 1.00	15.00 6.29	5.00 2.38	30.00 13.23	5.00 2.38	10.00 4.00	10.00 4.79	30.00 15.00

TABLE L-4
Weighting of Attributes for Memorandums by Program Managers

RANKERS	Early State- ment of the Objective	Format Follows Conventions	Alternatives Presented		Positive Ions		Subject of Immediate Interest		Accuracy		Logical Sequence		Other	
1	30 (8.0)	10 (4.0)	10 (4.0)	10 (4.0)	10 (4.0)	10 (4.0)	20 (7.0)	10 (4.0)	10 (4.0)	10 (4.0)	10 (4.0)	10 (4.0)	0 (1.0)	0 (1.0)
2	35 (8.0)	5 (3.5)	25 (7.0)	5 (3.5)	5 (3.5)	2 (2.0)	10 (5.0)	10 (5.0)	10 (5.0)	10 (5.0)	10 (6.0)	10 (6.0)	0 (1.0)	0 (1.0)
3	15 (5.5)	10 (3.0)	20 (7.5)	15 (5.5)	15 (5.5)	10 (3.0)	20 (7.5)	20 (7.5)	20 (7.5)	20 (7.5)	10 (3.0)	10 (3.0)	0 (1.0)	0 (1.0)
4	15 (5.0)	5 (2.0)	15 (5.0)	10 (3.0)	10 (3.0)	20 (7.5)	20 (7.5)	20 (7.5)	20 (7.5)	20 (7.5)	15 (5.0)	15 (5.0)	0 (1.0)	0 (1.0)
Range	20.00	5.00	15.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	6.00	6.00	0.00	0.00
S.D.	10.31	2.89	6.45	4.00	4.00	8.72	8.72	5.77	5.77	5.77	3.95	3.95	0.00	0.00

TABLE L-5

Weighting of Attributes for Oral Communications in General by Program Managers

RAIERS	Inflection, Voice Quality	Organization of Material	Clear, Sub- stantive Objective	No Distract- ing Manner- isms	Adaptation to the Listener	Enthusiasm	Acceptable Grammar	Other
1	10 (4.0)	30 (8.0)	10 (4.0)	10 (4.0)	20 (7.0)	10 (4.0)	10 (4.0)	0 (1.0)
2	5 (3.5)	25 (7.0)	45 (8.0)	2 (2.0)	0 (5.0)	10 (6.0)	5 (3.5)	0 (1.0)
3	10 (3.5)	10 (3.5)	20 (7.0)	10 (3.5)	25 (8.0)	15 (6.0)	10 (3.5)	0 (1.0)
4	5 (2.5)	20 (6.0)	25 (7.5)	5 (2.5)	25 (7.5)	10 (4.5)	10 (4.5)	0 (1.0)
Range	5.00 2.89	20.00 8.54	35.00 14.72	8.00 3.95	17.00 0.02	5.00 2.50	5.00 2.50	0.00 0.00

TABLE L-6

Weighting of Attributes for Oral Presentations by Program Managers

RANKERS	Adaptation to the Audience	Content Re- lated to the Objectives	Effective Use of Visual Aides	Voice Quality	Comprehen- sion of Report Material	Naturalness in Presenta- tion	Enthusiasm	Other
1	20 (6.5)	20 (6.5)	10 (4.5)	5 (2.5)	30 (8.0)	5 (2.5)	10 (4.5)	0 (1.0)
2	15 (5.5)	30 (8.0)	15 (5.5)	5 (2.5)	20 (7.0)	5 (2.5)	10 (4.0)	0 (1.0)
3	25 (8.0)	10 (3.0)	15 (6.0)	10 (3.0)	15 (6.0)	10 (3.0)	15 (6.0)	0 (1.0)
4	22 (7.0)	25 (8.0)	10 (4.0)	5 (2.0)	10 (6.0)	10 (4.0)	10 (4.0)	0 (1.0)
Range	10.00 4.20	20.00 8.54	5.00 2.89	5.00 2.50	15.00 6.50	5.00 2.89	5.00 2.50	0.00 0.00
S.D.								

TABLE L-7
Weighting of Attributes for Conferences by Program Managers

RANKERS	Clear Agenda	Participation Encouraged	Maintenance of Order	Reconciliation of Opinions	Schedule Maintained	Prior Planning	Summarization of Key Points		Other
							Points		
1	20 (7.0)	5 (2.5)	15 (4.5)	5 (2.5)	20 (7.0)	20 (7.0)	15 (4.5)		0 (1.0)
2	20 (7.5)	10 (3.0)	10 (3.0)	15 (5.5)	10 (3.0)	20 (7.5)	15 (5.5)		0 (1.0)
3	20 (7.0)	20 (7.0)	10 (3.5)	15 (5.0)	5 (2.0)	20 (7.0)	10 (3.5)		0 (1.0)
4	20 (7.5)	15 (5.5)	10 (3.5)	3 (1.0)	7 (2.0)	10 (3.5)	15 (5.5)		20 (7.5)
Range	0.00	15.00	5.00	12.00	15.00	10.00	5.00		20.00
S.D.	0.00	6.45	2.50	6.40	6.66	5.00	2.50		10.00

TABLE L-8
Weighting of Attributes for Interviews by Program Managers

RANKERS	Interviewee Knows the Objective	Interview Summarized at the End	Prior Pre- paration of Questions	Open Climate Questions	Are Non- threatening Questions	Record of Interview Maintained	Optimum Time and Place	Other
1	10 (3.5)	10 (3.5)	20 (7.0)	10 (3.5)	20 (7.0)	20 (7.0)	10 (3.5)	0 (1.0)
2	20 (8.0)	10 (2.5)	15 (5.5)	15 (5.5)	10 (2.5)	15 (5.5)	15 (5.5)	0 (1.0)
3	20 (7.0)	5 (2.0)	20 (7.0)	15 (5.0)	20 (7.0)	10 (3.5)	10 (3.5)	0 (1.0)
4	25 (8.0)	10 (3.5)	20 (7.0)	15 (5.5)	5 (2.0)	15 (5.5)	10 (3.5)	0 (1.0)
Range	15.00 6.29	5.00 2.50	5.00 2.50	5.00 2.50	15.00 7.50	10.00 4.00	5.00 2.50	0.00 0.00

TABLE L-9

Weighting of Attributes for Conversations by Program Managers

RANKERS	Comments Pertinent	Proper Timing of Comments		Appropriate Non-verbal Responses		Adaptation to the Listener		Naturalness		Voice Quality		Acceptable Grammar		Other	
1	30 (8.0)	20 (6.0)	10 (5.0)	25 (7.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	5 (3.0)	0 (1.0)	0 (1.0)
2	25 (7.5)	25 (7.5)	15 (5.5)	15 (5.5)	10 (4.0)	10 (4.0)	10 (4.0)	10 (4.0)	5 (2.5)	5 (2.5)	5 (2.5)	5 (2.5)	5 (2.5)	0 (1.0)	0 (1.0)
3	20 (6.5)	20 (6.5)	10 (4.0)	20 (6.5)	20 (6.5)	20 (6.5)	20 (6.5)	20 (6.5)	5 (2.5)	5 (2.5)	5 (2.5)	5 (2.5)	5 (2.5)	0 (1.0)	0 (1.0)
4	15 (5.5)	20 (7.5)	10 (3.0)	20 (7.5)	10 (3.0)	10 (3.0)	10 (3.0)	10 (3.0)	10 (3.0)	10 (3.0)	10 (3.0)	15 (5.5)	15 (5.5)	0 (1.0)	0 (1.0)
Range		15.00	5.00	5.00	10.00	15.00	10.00	15.00	5.00	5.00	5.00	10.00	10.00	0.00	0.00
S.D.		6.45	2.50	2.50	4.00	6.29	4.00	6.29	2.50	2.50	2.50	5.00	5.00	0.00	0.00

TABLE L-10

Weighting of Attributes for Telephonic Communications by Program Managers

RANKING	Caller's Identity Known		Tone of Voice		Pertinent Information at Hand		Clarity of Information		Personalization		Effective Opening Statement		Courtesy		Other	
1	30	(0.0)	10	(4.5)	10	(4.5)	5	(2.0)	10	(4.5)	25	(7.0)	10	(4.5)	0	(1.0)
2	25	(7.0)	10	(4.5)	30	(8.0)	15	(6.0)	5	(2.5)	5	(2.5)	10	(4.5)	0	(1.0)
3	15	(5.5)	10	(5.5)	20	(6.0)	15	(5.5)	10	(2.5)	10	(2.5)	15	(5.5)	0	(1.0)
4	20	(7.0)	10	(3.5)	20	(7.0)	10	(3.5)	10	(3.5)	10	(3.5)	20	(7.0)	0	(1.0)
Range	15.00		5.00		20.00		10.00		5.00		20.00		10.00		0.00	
S.D.	6.45		2.5		8.16		4.79		2.50		8.66		4.79		0.00	

Appendix M: Communication Evaluation Tool

Instructions for Use of the Communication Evaluation Tool

Purpose. The Communication Evaluation Tool is intended to provide a means of getting feedback from the user of your system on some aspects of your communications. It may be your opinion that the messages you send incorporate characteristics which make the message effective and are therefore understandable to the receiver. The messages may not be as clearly understood by the receiver as you intended. The Communication Evaluation Tool provides the opportunity to get feedback directly from the receiver of the message. The weightings applied to the feedback allow you to direct your efforts to improving those attributes which have a larger impact. Low evaluations on less important attributes receive less emphasis than low evaluations on more important attributes.

Scope. The Communication Evaluation Tool allows evaluation of selected attributes of eight methods of communication. There are more attributes of communications than are addressed by this tool; however, the attributes addressed are important to effective communications. The tool does not provide an analysis of whether the messages are sent to the right people, whether the best method of communication for the circumstances has been used or if the receiver actually interprets the message as conceived by the sender. It does evaluate the user's perception of your communications effectiveness.

Format. There are three major sections to the Communication Evaluation Tool. These are:

- 1) Evaluation of Written Communications on pages M-4 through M-7
- 2) Evaluation of Oral Communications on pages M-8 through M-13
- 3) Weightings for the Attributes on pages M-14 and M-15

Use of the Tool. At a selected point in your program you may choose to obtain some insight into the effectiveness of your communications. The first step is to identify with whom you want to evaluate communications. The second step is to specify the methods of communication you use with this person. The third step is to choose the evaluation forms for the methods of communication used. The general attributes form should also be included if a specific method from that section is being evaluated. For example, if you choose to evaluate written reports you would include the Written Communications in General form and the Written Reports form. Using the cover letter shown on page M-3 or a similar letter, the forms would be forwarded to the person with whom you want to obtain feedback. The user of your program's product would normally be the evaluator. The evaluator would return the forms to you.

Upon return of the forms from the user or other evaluator, you would insert the attribute weights for the method of communication listed in the tables on the last two pages of this appendix. The weightings for written communications are on page M-14 and page M-15 for oral communications. The weightings for each method of communication align with the attributes listed on the form sent to the user. This weighting, multiplied by the value given by the user, yields a value for that attribute. The total for the method of communication can then be calculated. The total value can equal from 100 to 500 points.

There is no grade but only a relative score. By analyzing the attributes to see which have the highest weightings and which received the lowest evaluation you may work to improve your communications. Effort can be directed towards improving those attributes which have the greatest weighting and received the lowest evaluation from your user. You may also compare the total score for the different methods of communication and work on improving the method with the lowest total score. A follow up evaluation to the same person might show changes in the evaluation's relative score. It is important to consider that the score is not the basis for comparison between other evaluators or of your ability to communicate compared to other program managers.

Proposed Cover Letter for the Communication Evaluation Tool

In Reply Refer To

From: (Program Manager)
To: (Evaluator)

Subject: EVALUATION OF COMMUNICATIONS WITHIN THE PROGRAM

Encl: (1) Communication Evaluation Tool
(2) Return Envelope

1. The effectiveness of communications between program (project) managers and the users of the systems being managed is important to the success of any program. I am soliciting your help in evaluating the effectiveness of my communications to you.

2. The enclosed evaluation tool contains a series of questions about written or oral communications. The questions address characteristics which help make communications effective. Please circle a number, one to five, on the rating scale beside each question. You should base your responses on your own perceptions and should be candid. The blank spaces to the right of the rating scales are for my use in tallying the results of the evaluation. After completion of the evaluation please return it in the attached envelope, Enclosure (2). Further comments on our communications are welcome.

3. I look forward to continuing our work together. Your assistance will aid in improving the quality of our communications and is appreciated.

P.M. Manager

Copy to:
Files

Written Communications in General

Page ___ of ___

No Somewhat Yes

Is the thought clear and easy to perceive?

1 2 3 4 5

x ___ = ___

Regardless of the purpose of the message, do you feel it is presented positively?

1 2 3 4 5

x ___ = ___

Is the level of message complexity or simplicity appropriate to you?

1 2 3 4 5

x ___ = ___

Is the information to the point and in a conversational style?

1 2 3 4 5

x ___ = ___

Is there logical agreement between parts of the message?

1 2 3 4 5

x ___ = ___

Do you find the message easy to read?

1 2 3 4 5

x ___ = ___

Total = ___

Written Reports

Page ____ of ____

Is the subject matter of sufficient
Importance to warrant a report?

1 2 3 4 5

X ____ = ____

Is unnecessary information or
material excluded?

1 2 3 4 5

X ____ = ____

Are the important points clearly
established?

1 2 3 4 5

X ____ = ____

Have prejudice and emotion been
avoided?

1 2 3 4 5

X ____ = ____

Is the report neutral as to who the
intended reader is?

1 2 3 4 5

X ____ = ____

Does the report maintain a "present
time" viewpoint?

1 2 3 4 5

X ____ = ____

Are the topics clearly identified?

1 2 3 4 5

X ____ = ____

Total = ____

Correspondence

Page ____ of ____

Regardless of the purpose of the message, do you feel that it is presented in a positive way?

No Somewhat Yes

1 2 3 4 5

x ____ = ____

Is the correspondence interesting?

1 2 3 4 5

x ____ = ____

Do you feel the writer is sending the letter to you, personally?

1 2 3 4 5

x ____ = ____

Is the purpose of the letter stated early?

1 2 3 4 5

x ____ = ____

Is the ending of the letter cordial?

1 2 3 4 5

x ____ = ____

Does the letter have a professional appearance?

1 2 3 4 5

x ____ = ____

Does the correspondence contain enough supporting information to ensure that it is believable?

1 2 3 4 5

x ____ = ____

Total = ____

Memorandum

Page ____ of ____

	No	Somewhat	Yes	
Is the objective of the memorandum stated early and clearly?	---	---	---	x ____ = ____
	1	2	3 4 5	
Does the format of the memorandum follow the established pattern?	---	---	---	x ____ = ____
	1	2	3 4 5	
Are alternatives presented, when helpful?	---	---	---	x ____ = ____
	1	2	3 4 5	
Regardless of the subject, is the memorandum written in a positive way?	---	---	---	x ____ = ____
	1	2	3 4 5	
Is the subject of the memorandum of immediate interest to you?	---	---	---	x ____ = ____
	1	2	3 4 5	
Do you feel the content of the memorandum is accurate?	---	---	---	x ____ = ____
	1	2	3 4 5	
Does the memorandum relate information in a logical sequence?	---	---	---	x ____ = ____
	1	2	3 4 5	
Total				x ____ = ____

Oral Communication in General

Page ____ of ____

	No	Somewhat	Yes	
Were the words pronounced distinctly and were they easy to understand?	1	2 3 4	5	x ____ = ____
Was the material presented in an organized manner?	1	2 3 4	5	x ____ = ____
Was the objective of the message clear?	1	2 3 4	5	x ____ = ____
Were distracting mannerisms avoided?	1	2 3 4	5	x ____ = ____
Did the speaker seem to adapt the presentation to you, the listener?	1	2 3 4	5	x ____ = ____
Was the speaker enthusiastic?	1	2 3 4	5	x ____ = ____
Did the speaker's use of grammar seem acceptable?	1	2 3 4	5	x ____ = ____
Total				= ____

Oral Presentation

Page ____ of ____

	No	Somewhat	Yes			
	1	2	3	4	5	
Was the presentation at a level appropriate to the audience?	---	---	---	---	---	x ____ = ____
Was the content of the presentation closely related to the stated objectives?	---	---	---	---	---	x ____ = ____
Were the visual aides effective, if used?	---	---	---	---	---	x ____ = ____
Did the speaker's voice have a pleasing quality?	---	---	---	---	---	x ____ = ____
Did the speaker appear to fully understand the report material?	---	---	---	---	---	x ____ = ____
Was the presentation given in a natural manner, did the speaker appear comfortable?	---	---	---	---	---	x ____ = ____
Was the speaker enthusiastic?	---	---	---	---	---	x ____ = ____
Total = ____						

Conference

Page ____ of ____

	No	Somewhat	Yes	
Was the agenda clear?	---	---	---	x ____ = ____
	1	2	3 4 5	
Was participation encouraged?	---	---	---	x ____ = ____
	1	2	3 4 5	
Did the leader maintain order?	---	---	---	x ____ = ____
	1	2	3 4 5	
Were differences in opinion among the participants reconcillated?	---	---	---	x ____ = ____
	1	2	3 4 5	
Was the schedule maintained?	---	---	---	x ____ = ____
	1	2	3 4 5	
Was there evidence of prior planning?	---	---	---	x ____ = ____
	1	2	3 4 5	
At the conclusion, were the key points summarized?	---	---	---	x ____ = ____
	1	2	3 4 5	
Total				= ____

Interview

Page ____ of ____

	No	Somewhat	Yes	
Were you aware of the objective of the interview from the beginning?	---	---	---	x ____ = ____
	1	2	3 4 5	
Was the interview summarized at the end?	---	---	---	x ____ = ____
	1	2	3 4 5	
Did it seem that the questions asked had been prepared in advance?	---	---	---	x ____ = ____
	1	2	3 4 5	
Was a feeling of openness created?	---	---	---	x ____ = ____
	1	2	3 4 5	
Were the questions non-threatening?	---	---	---	x ____ = ____
	1	2	3 4 5	
Was a record of the interview maintained?	---	---	---	x ____ = ____
	1	2	3 4 5	
Was the interview held at the optimum time and place?	---	---	---	x ____ = ____
	1	2	3 4 5	
Total				= ____

Conversation

Page ____ of ____

Were the comments made pertinent,
applicable to the subject of the
conversation?

No	Somewhat	Yes
1	2 3 4	5

x ____ = ____

Did the other person's comments come
at a logical time?

1	2 3 4	5
---	-------	---

x ____ = ____

Were the physical expressions made by
the other person appropriate?

1	2 3 4	5
---	-------	---

x ____ = ____

Was the complexity of the conversation
at a comfortable level?

1	2 3 4	5
---	-------	---

x ____ = ____

Did the other person appear to have
a naturalness to their conversation?

1	2 3 4	5
---	-------	---

x ____ = ____

Did the voice characteristics of the
other person sound pleasing?

1	2 3 4	5
---	-------	---

x ____ = ____

Did the other person use grammar which
was not distracting to you?

1	2 3 4	5
---	-------	---

x ____ = ____

Did the other person actively listen to
you and provide feedback to you during
the conversation?

1	2 3 4	5
---	-------	---

x ____ = ____

Total = ____

Telephonic Communications

Page ____ of ____

No Somewhat Yes

Did you clearly know to whom you were speaking?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Was the other person's tone of voice pleasant?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Did it seem as if all information needed by the other person for the conversation was available?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Was the other person's speech clear and easy to understand?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Did you feel that you were talking to the person personally?

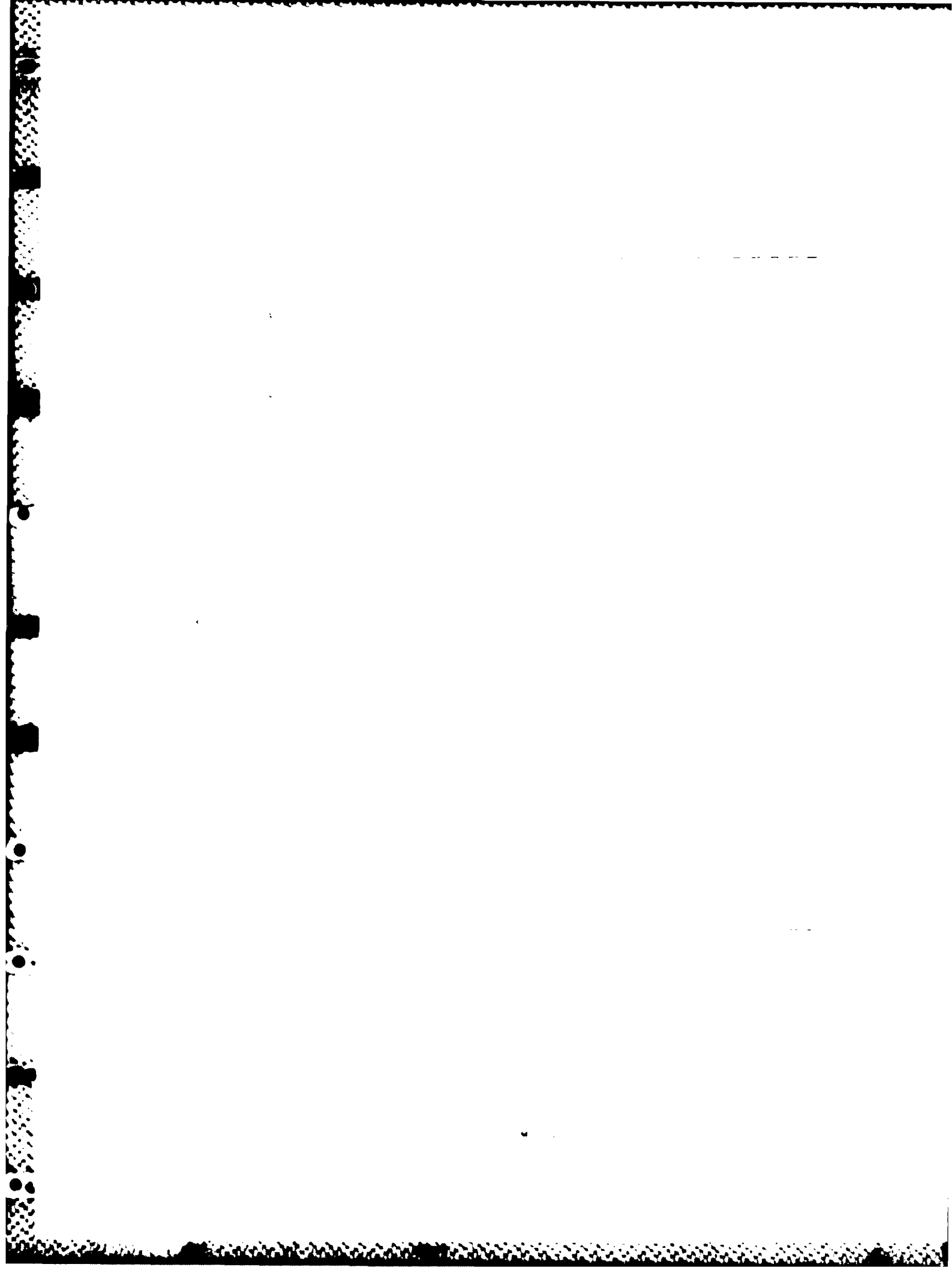
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Did the other person seem to be listening to you?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Was the conversation pleasant?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5



AD-A187 866

DEVELOPMENT OF A PROGRAM MANAGER/USER COMMUNICATION

3/3

EVALUATION TOOL(U) AIR FORCE INST OF TECH

WRIGHT-PATTERSON AFB OH SCHOOL OF SVTT

R M BROWDER

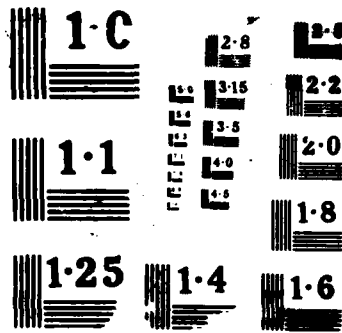
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Weightings for Oral Communications

General	Presentation	Conference	Interview	Conversation	Telephonic
9	17	19	15	18	18
18	18	15	7	13	12
20	12	14	16	13	19
12	12	11	17	22	11
15	16	12	17	13	14
14	11	18	14	7	13
12	14	11	14	10	13
-	-	-	-	4	-



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June 12, 1987

Appendix N: Correspondence From Paul Anderson

LCDR Robert M. Browder
Air Force Institute of Technology
Wright-Patterson Air Force Base, Ohio 45433-6583

Dear Mr. Browder:

You've certainly undertaken a substantial project. I've done what I can to help, but I ran into three problems with your lists of attributes. Perhaps you will find it helpful for me to explain them to you.

First, the lists seem to omit the most important attribute from a reader's or listener's point of view: the usefulness of the communication. All of the other attributes mean little if the communication doesn't address the audience's concerns and needs in a useful way.

Second, the descriptions of some possibly key attributes are vague. For example, under "verbal communication in general" you list "adaptation to the listener." Is this adaptation of content, point of view, emphasis, organization, and all other aspects so that the communication addresses the audience's concerns in an understandable and useful way? Or is it something more narrow, such as adapting only the diction?

Third, your lists of attributes seem to overlook the variety of purposes that communications might have. For example, in your list for memo, you include "alternatives presented." Many memos don't concern alternatives at all, while some are concerned exclusively with them.

The net result, I fear, is that these lists will not help anyone evaluate communications in a productive and meaningful way. The real concerns that readers and listeners have about the communications addressed to them are captured more faithfully in questions like these:

Did the communication address something of concern to me?
Did it tell me what I want and need to know?
Did it do so in a way that let me use that information readily?
Did it do so in a way that I could understand easily?
Did it do so without requiring me to spend more time than necessary reading or listening?

These questions are related primarily to the purpose of the communication, and apply equally to all forms (letter, memo, etc.). In fact, a single list of attributes for all communications might serve much better than multiple lists. If you want to create more than one list, it might make sense to organize them either around various purposes or around various features shared by all communications, such as selection of material, strategy for opening, and conformity to conventional formats.

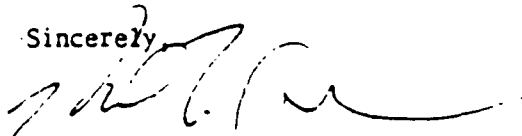
Robert Browder

- 2 -

June 12, 1987

I'm sure that this isn't exactly what you had hoped to hear, but I can't think of anything more helpful to tell you. I wish you the best of luck with your project.

Sincerely,

A handwritten signature in dark ink, appearing to read 'P. V. Anderson', with a long horizontal flourish extending to the right.

Paul V. Anderson, Professor and Director
Master's Degree Program in Technical
and Scientific Communication

0525A

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VITA

Lieutenant Commander Robert M. Browder was born 11 November 1952 in Rockingham, North Carolina. He graduated from high school in 1971 and attended Wingate College. Upon receiving an Associate in Science degree he entered North Carolina State University from which he received a Bachelor of Science in Wood Science and Technology. He entered the U.S. Navy via Aviation Officer Candidate School as an Aviation Engineering Duty Officer (Aviation Maintenance) Candidate. He served his first tour of duty onboard the USS Independence in the billets of Assistant Avionics Officer and then as the IM-2 Division Officer. Following this tour he was assigned to Fleet Air Reconnaissance Squadron Four in Patuxent River, Maryland. He served as the Maintenance Administration Officer, Assistant Quality Assurance Officer and the Maintenance/Material Control Officer. His next sea tour was as the Assistant Maintenance Officer of Attack Squadron Eighty-Five homeported at Naval Air Station Oceana, Virginia. He entered the School of Systems and Logistics, Air Force Institute of Technology, in June 1986.

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8a. NAME OF FUNDING / SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code)				10. SOURCE OF FUNDING NUMBERS	
				PROGRAM ELEMENT NO.	PROJECT NO.
11. TITLE (Include Security Classification)					
Development of a Program Manager/User Communication Evaluation Tool					
12. PERSONAL AUTHOR(S) Robert M. Browder, III, Lieutenant Commander, USN					
13a. TYPE OF REPORT MS Thesis		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) 1987 September	
				15. PAGE COUNT 201	
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) Acquisition, Procurement, Management. Naval Logistics Government Procurement, Communication Skills, Writing		
FIELD	GROUP	SUB-GROUP			
15	05				

Block 19

The purpose of this study was to develop a tool to help program managers evaluate their communications to the user. The needs of program managers were considered in the development of a proposed tool. A written tool requiring a minimum of time to use, but able to provide a means of prioritizing communication deficiencies, was the primary criteria.

Methods of communication used by program managers and important attributes associated with these methods were identified by an extensive review of business communications literature. Weightings of the attributes were obtained by having professionals in the field of communications assign weights to the attributes. The nonparametric Friedman F test was used to evaluate whether or not there were differences in the weights assigned by the communications professionals to the attributes within a method of communication. For all methods of communication examined, at least one of the attributes was found to differ from the other attributes. Also, several program managers assigned weightings to the attributes. The weightings given by the communications professionals were compared to the weightings given by the program managers. It was found that there was no statistically significant difference between the two group's weightings.

A proposed tool was developed based upon the attributes of the methods. The tool was designed so that the user could evaluate the presence of an attribute on a scale from one to five. The weightings obtained from the professional communicators could then be multiplied times the value given by the user. The resulting score can be compared to an arbitrary value selected by the program manager or it can be compared with other evaluations. The tool allows the program manager to obtain feedback on eight methods of communication.

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